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RETENTION OF FIRST-TERM AND SECOND-TERM MARINE CORPS ENLISTED PERSONNEL

by

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March 1997

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The purpose of this thesis was to investigate the factors affecting the retention behavior of first term and second term Marine Corps enlisted members. Data were extracted from the *1992 DoD Survey of Officer and Enlisted Personnel and their Spouses* and were matched with the respondents' 1996 status from the Active Duty Military Master and Loss File by the Defense Manpower Data Center. The sample was restricted to Marines with between two and ten years-of-service who had less than two years remaining on their enlistment contract and was further stratified by term of enlistment and gender. A complete conceptual model was developed which incorporated individual and organizational factors affecting retention. Four categories of determinants of turnover were used: Demographic, Military Experience, Cognitive and External. Logistic regression was used to measure the relative importance of a broad range of these factors for the retention decision. Results indicated that the factors affecting retention differ across term of service and by gender. No single factor was significant for all gender/term of service samples. Some factors were significant only for a particular term of service. Others were significant only by gender and many were significant only for a single sample. The specific findings can provide manpower planners with targeted information to manage retention levels for first term and second term Marines more effectively.

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RETENTION OF FIRST-TERM AND SECOND-TERM MARINE CORPS ENLISTED PERSONNEL

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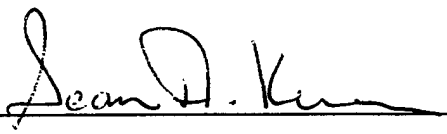
Author: 

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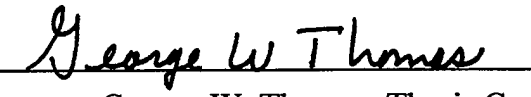
Approved by: 

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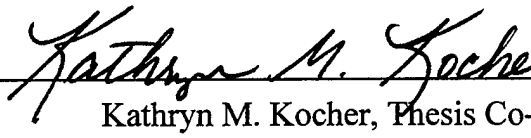

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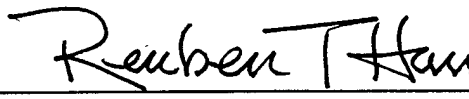

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ABSTRACT

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I. INTRODUCTION

A. BACKGROUND

1. The Significance of Retention

Since the introduction of the all volunteer force (AVF) in 1973, the problems of retention and turnover have been the subject of a great deal of research by the Department of Defense (DoD). Turnover has a significant effect on the military in terms of both monetary and non-monetary costs. From a monetary perspective each reenlistment reduces the need to recruit and train new personnel. From a non-monetary perspective reduction in turnover means an enhanced experience base, increased productivity and, increased readiness. Every year hundreds of thousands of enlistees face a reenlistment decision. The aggregate effect of these decisions has a profound impact on future manpower requirements for the military. Recruitment and retention policies are the two methods that manpower planners utilize to "shape the force" and meet manpower requirements. Effective manpower planning requires that both policies be considered when predicting or analyzing future trends. Shifts in retention rates, particularly at the first-term level, have a significant impact on the ability of the active force to meet its career manning goals. Unlike the civilian sector, the military force structure is a closed hierarchy, often referred to as an "internal labor market," in which an individual must start at an entry-level position. With very few exceptions, the military relies on new recruits for all of its manpower. Any significant reduction in retention rates would create a shortage of experienced personnel. The effect of this shortage would adversely impact operational efficiency, particularly in light of the technologically advanced systems in the current military arsenal that enlisted members are responsible for maintaining. Reduced retention also places additional demands on accession requirements. To maintain end-strength, each

separation ultimately requires an additional entrant into the manpower pipeline. Associated costs for advertising, recruiting, and training represent defense dollars that could be better spent on other requirements.

In 1991 the National Defense Authorization Act mandated steep reductions in the number of personnel in the armed forces. From 1991 through 1994 the number of active duty personnel in the Marine Corps was reduced from 194,000 to 174,000. This was the first time since 1961 that the Marine Corps had fallen below 180,000 [Ref. 1]. During this period Congressionally authorized programs such as Voluntary Separation Incentive (VSI) and Special Separation Bonus (SSB) were utilized as tools to assist drawdown and restructuring decisions. The successful trends in retention that emerged under the shadow of downsizing have continued through the mid 1990s. In 1995 the Marine Corps met its enlisted retention goals for both first and second termers of 20.4 percent and 73.1 percent, respectively [Ref. 2].

The recent success that the Marine Corps has enjoyed in meeting retention goals should not undermine the importance of continued research into the factors that determine an individual's intentions to reenlist. Understanding those factors that have significance for the retention decision and realizing that they change over time will provide manpower planners with the necessary information for implementing effective policy tools. These policy tools can then be used in a proactive manner to maintain desired levels of retention in the face of manpower issues that challenge the Marine Corps as it moves into the 21st century. Some of these challenges are discussed in the following section.

2. Manpower Challenges for the 21st Century

During any period of change in military history, considerable debate is devoted to factors which are perceived to impact the military's manpower requirements. In recent years there have been volumes written on the declining defense budget, the

improved economy, increased competition for labor and the shrinking manpower pool. All these factors pose tremendous challenges for manpower planners and continue to be relevant in today's environment. There are a number of other factors that manpower planners must be aware of in the coming decade. They include the shift to nonwar-fighting military missions, the changing manpower pool and youth interest in the military.

a. Nonwar-Fighting Missions

From March of 1991 to December 1992 the United States military has participated in a variety of operations and deployments. Some of these are outlined in the table below:

Table 1.1. Humanitarian Operations

OPERATION	LOCATION	DATE	MISSION
Provide Comfort	Kurdistan	April 91	Refugee relief
Sea Angel	Bangladesh	May 1991	Flood relief
Fiery Vigil	Philippines	July 1991	Volcano evacuation
-	Western Sahara	September 1991	UN observers
-	Zaire	September 1991	Airlift personnel
JTF GTMO	Cuba	November 1991	Refugee relief
Provide Hope	Russia	December 1991	Airlift supplies
Volcano Buster	Italy	April 1992	Rescue & Relief
-	Yugoslavia/Bosnia	April 1992	Airlift/Aid
JTF LA	Los Angeles	May 1992	Restore order
-	South Florida	August 1992	Hurricane relief
Restore Hope	Somalia	December 1992	Peacemaking

Source: Adapted from [Ref. 3:pp. 141-142].

These operations were of various length and duration and are representative of a trend towards a more humanitarian use of the military [Ref. 3]. This shift to utilizing the military in nonwar-fighting missions has continued, with recent Noncombatant Evacuation Operations (NEO) of civilians by U.S. Marines from Liberia and the Central African Republic.

In Fall 1994 *Awareness and Attitude Study* it was reported that involvement in peacekeeping operations like Somalia and Haiti gave younger people a sense of uncertainty about the future role of the military. The military's involvement in Haiti had the effect of making them less likely to consider enlisting. More damaging was the reported 30% that felt that the prestige and value of the military had declined as a result of these involvements [Ref. 4]. It is probable that these types of missions will continue to be required of the post-Cold War military. Their impact on both recruitment and retention, although beyond the scope of this thesis, deserve serious consideration by manpower planners.

b. The Changing Manpower Pool

For the past 25 years there have been considerable changes in the makeup of the labor force. In the late 1960s and early 1970s, the millions of teenagers who entered the labor market became known as the "baby boomers." During the 1980s, as the baby boomers aged, the ranks of younger workers entering the labor force became considerably leaner [Ref. 5]. Military manpower planners had been aware of this birth dearth for some time and through a combination of increased advertising, recruiting resources and pay and allowances they met the challenge. In the post-Cold War years of the early 1990s a declining defense budget signaled across the board cuts in all military spending. Monetary incentives for aggressive recruiting were just not available. Downsizing in the military provided some reprieve from the manpower challenges in a shrinking youth population. However, the artificially low

recruiting missions of the past few years are just about over. In FY 1996, Marine Corps accession requirements increase by 9% over FY 1994 levels, and in FY 1997 they increase by 14%. This is a formidable challenge considering that all services fell short of their FY 1994 contracting missions. This marked the first time the Marine Corps missed its goal since before 1980 [Ref. 4].

Although the mid 1990s signal the end of the birth dearth years with a trend towards a modest expansion in the youth labor force, projected changes in the population provide additional challenges that will have to be faced. The 18-25 age cohort is expected to grow from 30.2 million in 1990 to 32.4 million in 2015 however, as a proportion of total population, this same group is projected to decline from 12.1% to 10.7% during the same period [Ref. 6]. An increasing proportion of new entrants into the labor pool will tend to be women and minorities. By 2005 it is projected that the participation rate for women in the labor force will have grown to 63.2%. This represents a 5% increase over 1992 levels. During this same period the participation rate for men is projected to decline slightly from 75.6% to 74.7% [Ref. 5]. In 1993 Congress rescinded the statutory restrictions of Title 10, section 6015 and, as a result, 33 of 36 occupational fields in the Marine Corps are now open to women. From FY 1994 to FY 1999 Marine Corps accession requirements for women will rise by 80% [Ref. 7]. The expanding role of women in the military requires that manpower planners reevaluate the fundamentals of recruiting and retaining qualified women.

Much of the growth in the national population over the next two decades will be attributed to minorities. In 2015 minorities will account for 37.2% of the total population. Hispanic Americans will be the largest minority group increasing from 9% in 1990 to 14.7% in 2015. Over the same period, black Americans will increase from 11.7% to 13.8% and Asian Americans from 2.9% to 4.4%. In the 18-25 age cohort it is projected that by 2015 minority representation will

have increased to 44% from 32.9% in 1990. Whites will represent 55% of this cohort, a decline from 67.1% in 1990. Minorities traditionally come from disadvantaged backgrounds and, given the current quality standards for recruits and the increasing demand for specialized skills, emphasis will have be given to programs that not only enhance basic skills but additionally, provide specialized instruction and training [Ref. 6].

c. Youth Interest in the Military

The Department of Defense *Youth Attitude Tracking Survey* (YATS) and the United States Marine Corps' *Awareness and Attitude Study* reveals much about the perception of the military by Americas' youth. The 1994 Awareness and Attitude Study indicated that the overall lack of interest in the military still remained at the high levels reached over two years ago. Those young Americans who describe themselves as simply "not interested" in military service had increased from the previous year. Nearly 50% of those surveyed had the impression that the military was hiring less due to defense cuts and base closures. The National Service Plan and the AmeriCorps program also appear to be having an adverse impact on propensity to join the military. Among those surveyed, 47% said they would consider joining AmeriCorps. This level of interest was higher than that in any of the services. Among options available to get money for college, 56% believed that the National Service Plan and other programs were better alternatives than military service [Ref. 4]. These trends in youth attitudes have put increasing demands on military manpower planners to adopt additional recruit incentives and, point to the increasing significance of retention as a solution to meeting total military manpower needs.

B. FOCUS OF THE THESIS

There are a number of personnel management tools that Marine Corps manpower planners can utilize to affect the retention decision. These tools can be broadly

categorized as pecuniary and nonpecuniary. Pecuniary factors include basic pay, reenlistment bonuses and retirement benefits. Nonpecuniary factors include housing, job conditions, training, deployments and personal satisfaction. Most pay related policies require Congressional action and are therefore outside the control of Marine Corps planners. In order to manage retention, it is more reasonable to make planners aware of those nonpecuniary factors within their control that are significant for the retention decision.

This thesis will focus on the retention behavior of first term and second term Marine Corps enlisted members. A conceptual model of retention will be developed differing from most econometric studies of turnover which attempt to capture the effect of only one aspect of the turnover process. A robust social science modeling approach is adopted. This "more complete" approach allows for the examination of a broad range of explanatory variables and their effect on the retention decision.

C. RESEARCH QUESTIONS

The primary research question of this thesis is to determine what factors most significantly influence the reenlistment decision of first and second term Marine Corps enlisted men and women. Secondary research questions include:

- Are there significant differences in retention behavior between those who deployed to Desert Shield/Desert Storm and those who did not?
- Do the factors affecting the reenlistment decision vary significantly by gender?
- What are the effects of "overall satisfaction" with military life on the reenlistment decision and what makes up "overall satisfaction"?

II. LITERATURE REVIEW

A. DISCUSSION

One of the most durable topics of research in human resource management is employee turnover. In a broad sense, turnover is concerned with determining those factors that influence employees to either stay or leave an organization. The leaving, or turnover, is regarded as an important and consistently used explanatory variable in the field of management research and has been the topic of over a 1,000 studies in this century. A practical definition provided by Pearson [Ref. 8] describes turnover as the leaving behavior exhibited by employees when they severe their ties with the organization.

McEvoy and Cascio [Ref. 9] point out that organizational withdrawal can either be voluntary or involuntary in nature. Despite the academic attention that employee turnover has received, considerable debate has focused on distinguishing voluntary from involuntary turnover. Voluntary turnover tends to be employee initiated and includes decisions such as resignation. Involuntary turnover includes situations such as disability, firing or retirement. In reality, these distinctions are not always clearly defined, particularly when considering such practices as employer "encouraged" resignations or early retirements. Most turnover research focuses on voluntary turnover because it is widely believed that organizational personnel policies can have a significant impact in this area.

Although turnover tends to evoke negative connotations in the field of personnel management, according to Mobley [Ref. 10], it has both positive and negative consequences for both the individual and the organization. From the individual's standpoint, turnover can result in loss of seniority and benefits, disruption of family and social life, career regression, and transition-related stress. On the

positive side, turnover can result in increased earnings, a better "job-match" and renewed stimulation associated with new challenges.

From the organization's perspective, turnover tends to increase the costs associated with recruiting, training and assimilation. The organization can also experience loss of productivity, disruption in work environment, and decreased satisfaction among those who stay. On the other hand, turnover can benefit the organization through an infusion of new knowledge and the displacement of inadequate performers.

Among those employees who remain in the organization, turnover can have a positive effect due to increased promotion opportunities and enhanced cohesion, satisfaction and commitment. Similarly, turnover may adversely influence those staying through increased workloads and disruption of social and communication patterns.

Turnover is generally accepted as both a necessary and unavoidable occurrence within any organization. Although involuntary turnover is outside the organization's control it is assumed that organizational policies can have a significant impact on voluntary turnover. Excessive voluntary turnover is detrimental to any organization because of the monetary and psychological costs incurred. As a result of this, it is not surprising that there is extensive literature on the subject in both the military and civilian sectors.

B. TURNOVER IN THE CIVILIAN SECTOR

In 1958 March and Simon developed a participation-withdrawal decision model that provided a new direction for research in organizational turnover. This model suggested that the decision to leave the organization is based on an individual's perception of the ease and desirability of quitting. The ease associated with quitting a job is positively correlated with perceived job alternatives external to the

organization. The desirability of quitting is negatively correlated with an individual's current job satisfaction [Ref. 11].

Mobley [Ref. 12] built on March and Simon's research to develop a more thorough explanation of the quitting process. Mobley believed that there was more to this process than a simple satisfaction-turnover relationship. His model theorized a number of intermediate links between job-satisfaction and turnover. Specifically, Mobley's model suggests that experience of job dissatisfaction lead to thoughts of quitting. This in turn leads to an evaluation of the expected utility of a job search and of the cost of quitting. If the expected utility is acceptable, the next step is an intent to search for alternate employment. Intent to search leads to actual search which is followed by an evaluation of alternatives. If this evaluation favors alternate employment it will stimulate intent to quit. The final step in the process is actual quitting.

The first empirical test of Mobley's model was conducted by Mobley, Horner, and Hollingsworth [Ref. 13]. This study was undertaken because Mobley's original model was difficult to test empirically and lacked structure. The revised model suggests that job satisfaction influences turnover through thinking of quitting, search and evaluation of alternate employment, and intention to quit.

Mobley, et al, found negative correlations between tenure and job satisfaction and turnover and positive correlation between intention to quit and turnover. The single significant finding is that the effect of job dissatisfaction is on thinking of quitting and intentions rather than on turnover itself. The authors also conclude that further studies in organizational turnover should consider behavioral and cognitive variables in addition to the affective experience of job satisfaction.

Steers and Mowday [Ref. 14] evaluated several models of turnover in a three-part model. The study focused on the affective responses to an organization or job. These responses included job satisfaction, job involvement, and organizational

commitment. The model sequentially addressed job expectations and attitudes, job attitudes and intent to leave, available alternatives and actual turnover. Steers and Mowday found that job expectations and attitudes, organizational characteristics and experiences, and job performance have a direct impact on affective responses. These expectations and attitudes are in turn influenced by alternative job opportunities and individual characteristics. Alternative job opportunities are influenced by economic and labor market conditions, and individual characteristics. The authors argue that turnover is ultimately influenced by both affective responses to the job and non-work related influences. Affective considerations include job satisfaction and organizational commitment. Non-work related influences include spousal concerns, family influences, and life outside the work environment.

Porter and Steers [Ref. 15] hypothesized a conceptual framework centered on the role of met expectations and the turnover process. This model indicated that an individual brought his own set of unique expectations to the employment situation. The authors felt that the more the individual's expectations were met on the job, the greater his satisfaction. Porter and Steers used four categories of factors to classify variables: organization wide factors, immediate work environment, job related factors, and personal factors. Instead of performing an analysis they classified the results of 15 earlier studies into one of these categories. They found that a significant number of those employees who stay with the organization are more likely to experience the feeling of met expectations. From this observation, Porter and Steers conclude that the issue of met expectations may indeed play a significant role in explaining the turnover decision of employees.

Much research on the turnover process has focused on the impact of job satisfaction on the stay or leave decision. Hulin [Ref. 16] tested the effects of job satisfaction on turnover in a Canadian company that had been experiencing a high

turnover rate for several years. Surveys were used to measure five aspects of job satisfaction and results were utilized to revise a number of personnel policies. The surveys were then re-administered to both stayers and leavers. The results indicate significant increases in satisfaction with four of the five Job Description Indices (JDI) and they also showed significant differences between the stayers and the leavers. The author concluded that there is a strong relationship between job satisfaction and turnover.

In the 1980s several studies were conducted either to compare the predictive power of turnover theories or to group variables which consistently influenced the turnover decision. Muchinsky and Tuttle [Ref. 17] looked at 29 studies of turnover in an attempt to classify the explanatory variables into some logical order. Common predictors from the different models were grouped into five categories: job satisfaction, biodata, work related data, personal information, and test scores.

Muchinsky and Tuttle found that studies relating job satisfaction to turnover reported a consistent and strong correlation. Nearly every study that the authors reviewed found a negative relationship between job satisfaction and turnover. The majority of the studies using biodata showed reasonably consistent results in predicting turnover. Correlations were not strong, however, they proved to be stable upon cross-validation. Studies evaluating the relationship between work related data and turnover indicate that employee recognition and autonomy are negatively related to turnover whereas work unit size and task repetitiveness are positively related to turnover. Research which related personal factors to turnover reported consistent results. Age and length of employment are found to be negatively related to turnover.

The result of the study led Muchinsky and Tuttle to two basic conclusions. First, organizational turnover can be predicted using current research methodologies. Second, although biodata seems to be the best predictor of turnover, job satisfaction

and personal factors also show consistent predictive abilities. No consistent relationship between test scores and turnover was evident.

In a review of 120 turnover studies, Cotton and Tuttle [Ref. 18] applied meta-analytic techniques to published studies in organizational behavior from 1979 to 1984. They used stringent statistical requirements in reporting the conclusions of the reliability of turnover correlates. Correlates of turnover were classified as weak if the meta-analyses were significant at the .05 to .01 level, weak to moderate if significant at the .01 to .005 level, and moderate if significant at the .005 or below level. Confidence was strong if the correlates were at the .0005 level or below. Pay, overall job satisfaction, age, tenure, gender, education, number of dependents, biographical information, and met expectations are all found to be strong correlates of turnover. Unemployment rate, job performance, satisfaction with co-workers and promotion opportunities, and role clarity are found to have moderate correlation. Accession rate, task repetitiveness and intelligence had weak to no correlation.

In 1994, Lee and Mitchell [Ref. 19] attempted to provide a new direction for future turnover study. The traditional psychologically oriented research was driven by a model which held that employee turnover resulted from a particular combination of job dissatisfaction and perceived alternatives. Lee and Mitchell propose an unfolding model of employee turnover whose major components are "shocks to the system" and the resulting thought process which precedes the decision to quit and the actual act of quitting. Shocks are defined as particular events which can have a tremendous "jarring" impact on the individual employee. They serve to trigger the decision making process involved in quitting. The authors propose four decision paths which reflect possible combinations of shocks (or no shocks) and traces their impact to the turnover decision.

Decision path 1 is characterized by a shock to the system which triggers a preexisting course of action. The recollection of this course of action requires thought about the current situation, likely actions, and possible consequences of these actions. Decision path 2 occurs when a shock causes an individual to reassess his commitment to the organization. In this case the shock and follow-on situation are judged against an employee's values, goals, and behavioral strategies. If there is a mismatch the employee simply quits without consideration of alternate employment opportunities. Decision path 3 is characterized by a shock which invokes three sequential sets of judgements in assessing the attractiveness of another organization. If the employee's current organization is judged to be best the employee will stay, if an alternative organization is judged to be better the employee will leave. In decision path 4 there is no shock and organizational life is characterized by few notable events. Within this environment, many employees begin to feel that they no longer fit in their jobs and some level of dissatisfaction begins to occur. Some employees become so dissatisfied that they simply quit without regard to alternative employment, other dissatisfied employees follow the process of the traditional turnover models. A key aspect of this decision path is that without a shock the initial disaffection experienced by the employee occurs gradually.

In 1996 Lee, Mitchell, Wise, and Fireman [Ref. 20] conducted a test of Lee and Mitchell's model of voluntary employee turnover. The focus of the study was to test a theory-based hypothesis on the different forms of quitting. The study did not compare stayers with leavers. Data were gathered using a multiple case study design in which forty-four nurses who had voluntarily quit their jobs participated in in-depth interviews.

Although Lee, et al, concede that not all of their theory-based predictions were confirmed in the study, they suggest that a number of meaningful observations were

realized. First, 55 percent of the cases evaluated conformed to the turnover process of the traditional turnover models. That is, job dissatisfaction, job search, evaluation of alternatives and finally, quitting. However, the remaining 45 percent of the sample reported leaving their jobs without having any type of job offer. The authors suggest that this type of behavior cannot be easily explained by the traditional turnover models. Second, 58 percent of the sample reported that some type of shock had an impact on their decision to quit. This provides preliminary and empirical evidence on the different types of shocks and how they are associated with a particular decision path. Third, the unfolding model contradicts conventional thinking on turnover in that the data suggest; 1) factors other than affective considerations can prompt the quitting process; 2) not all people require an alternative job before quitting; and 3) mismatches of values, goals, and behavioral strategies are critical influences in the turnover process.

As previously discussed, turnover in the civilian sector has been the subject of extensive research in the 20th Century. Influential contributions by March and Simon (1958), Porter and Steers (1973) and Mobley (1977) have encouraged researchers to focus on organizational withdrawal in order to obtain a better understanding of employee mobility.

C. TURNOVER IN THE MILITARY

Turnover in the military has been separated from turnover in the civilian sector because there are a number of specific characteristics which are unique to the military member's service obligation. Enlisted personnel enter the military for a contracted period of time. This contractual period ranges from two years to as many as six years for certain technical specialties. Upon completion of the initial contract requirement service members are faced with three decisions: 1) reenlist or extend for a specified time; 2) leave active duty and join the reserves; or 3) leave the service altogether. If

the service member decides to reenlist, he will continue to face these three decisions at a single, predictable point in time throughout his career. In the civilian sector employees are not required to make such specific decisions during their tenure. If they do intend to leave their employer, ties to the organization can generally be severed at any point in time with two weeks notification. As a result of these differences, the decision to reenlist carries with it a great deal more commitment than the decision to remain at a job in the civilian sector.

Studies on military turnover generally focus on two broad categories of explanatory variables and their impact on the retention decision. These categories are pecuniary and nonpecuniary. Pecuniary variables include factors such as pay, Selective Reenlistment Bonuses (SRBs), and unemployment. Nonpecuniary variables include factors such as satisfaction, organizational commitment, and job training.

Buddin, [Ref. 21] in his study of early military attrition behavior discusses two types of models that are applied to job separations; the firm-specific human capital model, and the job matching model. The firm-specific human capital model provides the background for three hypotheses: 1) separation rates decline with tenure; 2) separation rates are inversely related to individual characteristics which are complementary with firm-specific investment; and 3) indicators of previous job mobility are positively correlated with separation probability.

The job matching model is further categorized into a learning or experience model and a search model. The search model assumes an individual understands the characteristics of a particular job and has the ability to evaluate alternative job opportunities. The experience model suggests that an individual cannot ascertain the true value of a job match without first "experiencing it."

Buddin points out that the experience model is more appropriate for explaining early military attrition because of the limited contact that new enlistees have with the

civilian labor market. Three hypotheses follow from this model: 1) most separations take place at low levels of tenure; 2) increased uncertainty about the initial employment period increases the probability of mismatching and separation; and 3) the probability of mismatch and future separation is positively related to the ease of future separation perceived at the initial enlistment.

Buddin used MEPS data, survey results about prior work history, and subsequent service information to estimate the effect of a number of explanatory variables on early attrition. He found that younger recruits are less likely to separate than older recruits. The study confirms earlier works on the effects of education and aptitude on attrition. Additionally, experience and work history are found to have an important impact on early attrition.

Compensation in the military hierarchy is a factor of both, paygrade and years-of-service. Promotion implies increased compensation. Active duty retention is distinguished by the fact that pay (paygrade) is the most important and consistent explanatory variable [Ref. 22]. In a 1985 Center for Naval Analyses study Goldberg [Ref. 23] looked at the effect of compensation and civilian opportunities on retention in the Navy. Although he found that unemployment is an important determination of retention, it is of secondary importance when compared to military pay.

A widely used multivariate model used by the military in predicting retention is the Annualized Cost of Leaving or ACOL approach. In a 1987 study, Cymrot [Ref. 24] used the ACOL model to examine the relationship between SRBs and the retention of Marine Corps enlisted personnel. The ACOL approach was first developed by Warner and Nelson and theorizes that an individual's decision to stay in the military is based on the perceived costs and benefits of the alternatives. This approach assumes that an individual makes a decision in a utility-maximizing framework. This means that, given a set of alternatives, the individual chooses the

one that provides the most satisfaction. Cymrot grouped 356 Military Occupational Specialties (MOS) into 22 skill families based on the assumption that individuals in similar specialties will have similar responses to bonuses. Each of these skill families was further divided into three experience zones which determine the SRB multiple. Zone A included those Marines with years of service from 21 months to six years. Zone B was six to ten years of service. Zone C was ten to 14 years of service. The model estimated reenlistment rates in the 22 skill families and the three experience zones for all bonus multiples.

Cymrot finds a strong statistical relationship between bonuses and reenlistments in practically every combination of skill and zone. As an example, he found that increasing the SRB multiple from 0 to 1 in Zone A for skill family A could increase reenlistments by over 13%.

Other explanatory variables used in the model are unemployment rate, net pay and rank. In Zone A, Cymrot found that a 1% increase in the unemployment rate increases retention by 4.3%. The effects in Zones B and C were generally not statistically significant. Net pay was defined as the difference between potential military pay and civilian pay for a one year period. Cymrot found the effect of net pay on retention to be modest at best. He hypothesizes that this is due to the problems associated with estimating both military and civilian earnings and that the variable, rank, captures much of the variation in military pay. Of the other variables considered in the model, rank has the greatest impact on the retention decision. It was found that those Marines of higher rank are more likely to remain in the service than those of a more junior rank.

Cooke and Quester [Ref. 25] looked at the first enlistment term and used three separate logistic models to estimate the relationship between recruit background characteristics and successful outcomes in the Navy. The purpose of this study was

to expand the concept of a successful recruit beyond simply attriting or not attriting. A Successful enlistee was defined as one who: completed his enlistment, was eligible to reenlist, and either reenlisted or extended. The analysis was restricted to male Navy recruits with no prior military service who entered the Navy in fiscal years 1978 through 1982 and had an initial obligation of four years.

The findings of the study indicate that those characteristics associated with contract completion are, in general, predictive of retention and promotion. Recruits who are high school diploma graduates, with high test scores and who enter the Navy through the Delayed Entry Program (DEP) are more likely to be successful. In addition, Black and Hispanic recruits are more likely than non-black/non-Hispanic recruits to complete their first enlistment and be promoted.

In a 1994 study, Kocher and Thomas [Ref. 26] used logistic regression to analyze retention behavior of active duty Army nurses. Explanatory variables were divided into three categories: external market, personal, and work-related. The work related factors consisted of satisfaction with various aspects of military life. Partial effects interpretations of the significant variables in the logistic regression showed that a nurse with all the characteristics of the referent individual with the exception of a one standard deviation increase from the average satisfaction component score has an 8% increase in retention likelihood.

In a review of the literature that addresses the issue of why military members leave the service, Boesel and Johnson [Ref. 27] report mixed results on the effect of marital status and family size on retention. Many studies seemed to confirm that those service members who are married (as compared to single), and those married with children (as compared to married with no children) seem to be more likely to attrite. However, the authors point out that Buddin (1981) find the opposite to be true, and Greenberg et al. (1977) find insignificant relationships for Marines.

In a 1984 study, Warner and Goldberg [Ref. 28] used the ACOL model to examine the relationship between sea duty and reenlistments. The authors hypothesized that the utility associated with staying or leaving was based on two factors: 1) the present values of the income streams associated with staying or leaving; and 2) the present values of nonpecuniary aspects of these choices. The authors refer to these nonpecuniary aspects as "taste factors." If the net taste for civilian life exceeds the annual cost of leaving, the individual will not reenlist.

Warner and Goldberg found that ACOL is significant in explaining much of the variation in a service member's probability of reenlisting. Other significant variables include, sea duty and marital status. Increases in sea duty are found to reduce the reenlistment rate for any given paygrade. Married sailors are found to be more likely to reenlist than those who are unmarried. Warner and Goldberg felt that this is due to the greater value that married individuals place on nonpecuniary benefits such as medical benefits.

Cooke, Marcus, and Quester [Ref. 29] evaluated the effect of military operational tempo on Navy enlisted retention. They looked at the reenlistment decisions of male sailors between FY79 and FY88 who had accumulated at least thirty months deployed overseas before their reenlistment decision. The personnel were categorized as: four year enlistees at their first reenlistment point, married four year enlistees at their first reenlistment point, and personnel in their eight to tenth year of service who made a reenlistment decision. There were no significant relationships for those personnel in the eight to ten YOS category. For first-termers they found that retention is lowered by long deployments, short turnaround periods, and increased underway time when not deployed. Another interesting finding is the effect of real world crises on the reenlistment decision. The authors referenced the Beriut crisis and

find that participation in this type of operation increased retention despite longer deployments and shorter turnaround time.

A 1995 study by Evans [Ref. 30] attempted to identify common concerns of soldiers in the U. S. Army who survived through the downsizing process. Semi-structured interviews with 179 active duty soldiers were conducted in 1992 at a number of Army posts throughout the country. The sample was a cross section of different ranks and occupational specialities and was made up of individuals who were not separating from the military. Officers, Noncommissioned officers (NCO) and junior enlisted comprised 10%, 42% and 48% of the sample, respectively.

The format of the interviews varied in structure dependent on the group being interviewed. Junior enlisted were interviewed in groups of up to ten members for an average of two-hours. Noncommissioned officers were also interviewed in groups similar to junior enlisted however, they were also interviewed individually. Unlike the enlisted soldiers, officers were interviewed on an individual basis only, for an average of one hour.

The author points out that a remarkable feature of the study was the consistency of certain topics that are addressed by the participants. Although there are unique issues associated with rank, occupation and installation, analysis of the data identified seven areas of concern that are present regardless of personnel characteristics. These areas are broadly categorized as; leader behavior, information commitment, stress and family, satisfaction, performance/readiness and retention.

Several interesting Naval Postgraduate School theses evaluate the impact of demographic and satisfaction variables on the reenlistment decision. These theses all used the 1985 DOD Survey of Officer and Enlisted Personnel to examine retention behavior of enlisted personnel in the Navy, Air Force and Marine Corps.

In 1989 Hempell and Parshall [Ref. 31] used Navy enlisted responses to the survey as well as the 1985 DOD Survey of Military Spouses in their research. They were interested in determining if reenlistment intentions change over time and whether spouses have any significant influence on the reenlistment decision. To accommodate this analysis, data were stratified by term of enlistment, gender, and months remaining on active duty. Logistic regression was then used to estimate a binary choice model, reenlist or not.

For all groups, Hempell and Parshall found that reenlistment intentions accurately predict actual reenlistment behavior. They also found that factors influencing the reenlistment decision changed as the term of enlistment changed. Enlistments increase from 43.7% in the first term to 91.6% in the third term. Income and marital status are the most significant variables for those on their first term. Time at sea and job satisfaction are significant for those on their second term. The only variable significant for those on their third term of enlistment is paygrade. Factors influencing the reenlistment decision were found to be different among males and females. Males tended to be more unsure of their reenlistment decisions than females. Finally, it was shown that spouses and family did indeed have an important influence on the service member's reenlistment decision.

Finn [Ref. 32] used Marine Corps enlisted responses to the 1985 DOD Survey to examine the effects of job satisfaction, satisfaction with military way of life, and family environment on the reenlistment decision, and how these factors differed across occupations. The data were stratified by occupation and tenure. The occupation grouping consisted of two data sets, combat arms and non-combat arms. The two tenure groups were first term and second term. Logistic regression was then utilized to estimate parameters for the four data sets and a combined data set.

For the combined data set, Finn found that time-in-service, rank, marital status, education, race, job satisfaction and chance of finding a good civilian job are all significant in predicting reenlistment. Differences were found across occupations and terms of enlistment. However, job satisfaction, race, and chance of finding a good civilian job are consistently significant for all five models. Job satisfaction was found to be the single most significant variable affecting the reenlistment decision.

One of the most interesting findings from the study was the insignificance of gender for reenlistment behavior. The author hypothesizes that this is due to the increased number of women in the military coupled with the expanding occupational fields available to them. As a result of this, the author believes that, as the differences between available career opportunities for men and women decline, so will their reenlistment behavior differences.

In a 1989 thesis, Lempe [Ref. 33] used the 1985 DOD Survey to identify those factors influencing the voluntary retention of first and second term Air Force enlisted personnel. Similar to Finn's research, Lempe also wanted to determine how these factors differed across term of service and occupational grouping. Explanatory variables were grouped into tenure, demographic, cognitive and economic categories. Logistic models were estimated for each term of service and occupational grouping.

Satisfaction with military life is the most consistent variable, in terms of sign and significance, across all models. The effects of bonuses, paygrade, marital status and spouse's income tended to vary by occupation and term of service. SRB has a positive and significant effect on retention for first term personnel, however, it is negative and significant in their second term. This suggests that those service members who receive a reenlistment bonus in their first term would require an even bigger bonus in their second term to induce them to stay. The effects of paygrade on the retention decision varied in terms of magnitude and direction. Marital status

significantly increases the retention probability of those in their first term. Spouse's income is only significant for the retention decision of second term personnel. Minorities, older personnel, and males are also found to be more likely to reenlist.

As previously discussed, turnover in the military differs from that in the civilian sector through a number of unique characteristics associated with the withdrawal process in the military. Despite these differences, factors influential to the turnover process are very similar and can generally be grouped into pecuniary and nonpecuniary categories. A summary of those studies thought to be significant in civilian and military turnover research can be found in Table 2.1.

Table 2.1. Summary of Turnover Research

Author (Date)	Categories of Explanatory Variables	Significant Variables
Civilian Studies		
March and Simon (1958)	Decision to terminate as a function of the ease and desirability of quitting	Conceptual Model
Mobley (1977)	Intermediate steps in the dissatisfaction-turnover process	Conceptual Model
Mobley, et al (1978)	General job satisfaction, Thoughts about quitting, Intention to quit, Probability of alternative employment, Biographical information	Intention to quit
Steers and Mowday (1981)	Affective	Job satisfaction, Life outside work, Organizational commitment, Spousal concerns, Family influence
Porter and Steers (1973)	Organizational, Work Environment, Job-related, Personal	Met Expectations

Table 2.1 (Continued)

Author (Date)	Categories of Explanatory Variables	Significant Variables
Hulin (1968)	Satisfaction with; Pay, work, supervision, promotions and co-workers	Job Satisfaction
Muchinsky and Tuttle (1980)	Job Satisfaction, Biodata, Work Related, Personal, Test Scores.	Job Satisfaction, Employee Recognition, Autonomy, Task repetitiveness, Work unit size, Age, Length of employment
Cotton and Tuttle (1986)	External, Work-related, Personal.	Pay, Job Satisfaction, Age, Tenure, Gender, Education, Number of dependents, Met expectations, Biographical
Lee and Mitchell (1994)	System "shocks"	Conceptual Model
Lee, et al (1996)	Interview responses, Survey responses	58% of sample report a precipitating shock prior to the turnover decision
Military Studies		
Buddin (1984)	Demographic, Prior Experience, Job Match and Satisfaction, Entry Point Decisions, Military Alternatives, Socioeconomic	Age, Education, Work history, Experience
Goldberg (1985)	Military compensation, Alternative civilian opportunities	Pay, Unemployment rate
Cymrot (1987)	ACOL, External economic, Tenure	Bonuses, Rank

Table 2.1 (Continued)

Author (Date)	Categories of Explanatory Variables	Significant Variables
Cooke and Quester (1992)	Background characteristics	High School diploma grad, AFQT, Race, Delayed Entry Program.
Kocher and Thomas (1994)	External market, work-related Personal/Demographic	Satisfaction: work and military life, Satisfaction: location/ assignment stability, Race, Family Status.
Warner and Goldberg (1984)	ACOL, Demographic, External economic	Sea duty, Marital status
Cooke, et al (1992)	Demographics, Occupation, Ship type, Deployment tempo, Location of ship maintenance facilities	Pay, Deployments, Turnaround periods, Underway time, Crises.
Evans (1995)	Downsizing	Leader behavior, Information, Commit-ment, Stress & family, satisfaction, Perform-ance and Readiness, Retention
Hempel and Parshall (1989)	Demographic, Satisfaction, Intentions to quit	Intentions, Spousal influence
Finn (1988)	Opinion, Demographic	Time-in-service, Rank, Marital status, Educa-tion, Race, Job satisfaction, Probjob
Lempe (1989)	Demographic, Tenure, Economic, Cognitive	Sex, Race, Age, Time from separation, Satisfaction

Source: Author.

III. DATA AND MODEL DEVELOPMENT

A. CONCEPTUAL MODEL OF RETENTION

Most conceptual models of the turnover process tend to include essentially the same variables. Despite this basic similarity there are distinct differences in how these variables are categorized. Based on the literature review a theoretical model of retention was developed in which actual staying behavior (retention) was modeled as a function of four broad categories of explanatory variables. The dependent variable in this conceptual model can be categorized as a dichotomous choice (stay/leave). It is hypothesized that these four categories have a simultaneous influence on a Marine's decision to reenlist or separate and consequently their relative importance on the turnover decision will be examined in this study. The four categories of explanatory variables are: Demographic, Military Experience, Cognitive and External. The Demographic category includes variables such as race/ethnic group, education and marital status. Military Experience includes variables that capture Military Occupational Specialities and deployment history. The Cognitive category includes a military member's reported satisfaction with various aspects of military life and concerns over force reductions. The External category includes variables such as alternative job opportunities in the civilian labor market.

The conceptual model is presented here in general form:

Retention = f (Demographic, Military Experience, Cognitive, External)

B. DATA SOURCE AND RESTRICTIONS

1. Data Source

The data used for this thesis were drawn primarily from the *1992 Department of Defense Survey of Officer and Enlisted Personnel and Their Spouses*. The survey was conducted by the Defense Manpower Data Center (DMDC) for the Office of the

Under Secretary of Defense for Personnel and Readiness. The DoD survey is organized into ten sections and collected information on attitudes, experiences and demographic characteristics of military members. There were almost 140 questions on subjects such as personal and military background, family composition, career plans and satisfaction with various aspects of military life. [Ref. 34]

The survey was conducted by mail during the Spring and Summer of 1992, and was administered to 96,830 active-duty members, stratified by Service, officer and enlisted status, and gender. The basic sample consisted of 75,346 active-duty members. Several special samples in the 1992 survey include: a longitudinal element of 12,000 service members from the 1985 survey who are still on active duty; 4,000 enlisted recruiters; and 5,484 AGR/TARS. Additionally, surveys were sent to 64,643 spouses of whom 24,165 responded. [Ref. 35]

The population from which the sample was drawn consisted of active-duty officers and enlisted personnel who were stationed in the United States or overseas on 30 September 1992. The original sample consisted of 51,739 enlisted personnel. The overall response for enlisted personnel was 32,246 of which 6,995 were Marine Corps personnel. The overall enlisted response rate was 62%. [Ref. 35]

For this thesis, the survey data were matched by DMDC with information from the Active Duty Military Master and Loss file. This file contains basic personnel information about those individuals on active duty and those who have separated. The merged file indicated the survey respondents' status as of 1 June 1996. A variable, status, was constructed to describe reenlistment behavior. Those who had passed a reenlistment point and had reenlisted are considered STAYERS in this study. Those who had separated are considered LEAVERS. Due to certain data limitations, no distinction was made between voluntary and involuntary separations.

2. Restrictions Imposed

Since the purpose of this thesis is to examine the retention behavior of first and second term Marine enlisted members, the data were initially restricted to only those enlisted Marines who were serving in their first and second terms. The data were further restricted to those Marines that had two years or fewer remaining on their current enlistment. This restriction ensures that Marines in the sample had reached and made a reenlistment decision prior to 1 June 1996 when the data were matched with actual retention behavior.

Those members with more than 10 and less than 2 years of service were eliminated from the sample. It is believed that those Marines with more than 10 years of service would be influenced by the proximity of the 20 year "retirement effect." Marines with 20 years of service are eligible for full retirement with a high percentage of active duty benefits retained for life. Those Marines with less than 2 years of service were eliminated to minimize the effects of any hastily formed opinions. At this juncture in an enlisted Marine's "career" much of his or her time has been spent in formal or on-the-job training. Operational experience in the Fleet Marine Force at this time is believed to be at a level where an informed reenlistment decision cannot be made.

Finally, the data were also restricted to paygrades E-3 through E-6 and those members under 35 years of age. These restrictions were applied in order to avoid the affect of atypical Marines. Observations with unrealistic values were also removed.

The final data set contained 2,312 observations. This combined data set was further divided into data sets consisting of those serving in their first enlistment and those serving in their second enlistment. One of the goals of this thesis is to determine if the factors affecting the retention decision vary significantly by gender. The 1992 DoD Survey sampled females at a higher rate in order to provide for more

detailed analysis of this group. In order to capitalize on this rich source of information, the two terms of enlistment data sets were further stratified by gender. Table 3.1 provides an overview of sample observations in each of the four data sets.

Table 3.1. Data Set Observations

Data Set	First Term (Male)	First Term (Female)	Second Term (Male)	Second Term (Female)
Number of Observations	801	901	310	241

Source: Author.

C. CANDIDATE EXPLANATORY VARIABLES

Over 500 potential explanatory variables were available for analysis as a result of merging the 1992 DoD Survey and Military Master and Loss File. Those variables which are supported by the literature and fit the categories in the conceptual model outlined for this study were chosen for preliminary analysis. Candidate demographic variables are; race/ethnic group, marital status, education, entryage and current age. Variables selected for consideration in the military experience category are; paygrade, years of service, occupational speciality, deployment history and several variables which address spousal influence in the career decisions of active duty military members. Candidate cognitive explanatory variables include; measures of job satisfaction, concerns about force reductions and military met-expectations. The final category, external, includes variables which measure a Marine's perceptions of the civilian labor market.

a. Individual Data Sets

Tables 3.2 through 3.9 present a preliminary exploratory analysis of the candidate explanatory variables in each of the four data sets. Frequency distributions of dichotomous explanatory variables and descriptive statistics for continuous variables are utilized to provide some insight into the characteristics of the samples. Despite the useful insights that these statistics may provide, it should be recognized that accurate conclusions cannot be drawn from these descriptive statistics. The individual variables in the preliminary analysis are not isolated from the effects of other candidate explanatory variables.

Table 3.2. Dichotomous Variables First Term Males (N=801)

Variable (Name)	Frequency	Percent	Missing
DEMOGRAPHIC			
Race/Ethnic			
White + Other (WHITE)	639	79.8	0
Black (BLACK)	111	13.9	0
Hispanic (HISP)	51	6.4	0
Marital Status			
Single, no children (SNC)	471	62.5	48
Single, children (SWC)	5	0.7	48
Married, no children (MNC)	139	18.5	48
Married, children (MWC)	138	18.3	48
Education			
Some College (SOMECOL)	240	30.3	10
MILITARY EXPERIENCE			
Time/Tenure			
Paygrade			

Table 3.2 (Continued)

Variable (Name)	Frequency	Percent	Missing
E-3 (LCpl)	498	62.2	0
E-4 (Cpl)	240	30.0	0
E-5 (Sgt)	63	7.9	0
Desert Shield/Storm (DEPSWA)	456	56.9	0
Military Occupation			
Combat Arms(COMBAT)	241	30.1	0
Combat Support (CBTSUP)	297	37.1	0
Aviation Support (AVSUP)	131	16.4	0
Service (SERVICE)	132	16.5	0
Spousal/Family influence			
Spouse, Active Duty (SPAMIL)	12	4.2	514
Family Separation (FAMSEP)	149	39.3	422
Spousal Influence (SPINF)	236	77.1	495
COGNITIVE			
Expectations			
Met Expectations (METEX)	263	33.2	8
EXTERNAL			
Labor			
Civilian Job Search (CIVEMP)	314	39.7	10

Source: Author.

Table 3.3. Continuous Variables First Term Males (N=801)

Variable (Name)	Mean	Std deviation
DEMOGRAPHIC		
Age entered active duty (ENTRYAGE)	19.46	1.73
Age as of 1/1/92 (AGECUR)	23.56	2.04
MILITARY EXPERIENCE		
Years of service as of 1/1/92 (YOS)	4.13	1.24
COGNITIVE		
Satisfaction		
Overall Satisfaction with mil life (SATMIL)	3.55	1.75
Satisfaction with:		
Freedom (FREEDOM)	2.66	1.19
Acquaintances (ACQUAINT)	3.76	0.89
Co-workers (COWORK)	3.47	0.92
Assignments (ASSIGN)	3.14	0.96
Pay (PAY)	2.50	1.05
Environment for family (ENVIRON)	2.90	0.92
Frequency of moves (MOVES)	3.01	0.86
Retirement benefits (RETIRE)	2.92	0.79
Service to country (SERVE)	3.93	0.95
Current job (CURJOB)	3.03	1.22
Promotion opportunities (PROMOTE)	2.39	1.12
Job training (TRAIN)	2.82	1.07
Job security (SECURE)	3.12	0.98
Work conditions (WORKCOND)	3.04	1.04

Table 3.3 (Continued)

Variable (Name)	Mean	Std deviation
Drawdown Concerns		
Long term opp. in military (LONGOPP)	2.48	1.63
Type of civ. job if separated (WORKTYPE)	3.05	1.56
Ability to get civ. job quickly (QUICKJOB)	3.13	1.56
Financial burden if separated (FINBURD)	2.95	1.63
Ability to adjust to civ. life (CIVADJ)	1.97	1.35
EXTERNAL		
Prob. of finding good civ job (PROBJOB)	0.66	0.28

Source: Author.

The variable which measures a Marine's overall satisfaction with military life is measured on a Likert scale with values ranging from 1 to 7. A value of 1 indicates that a Marine is "very dissatisfied", a value of 4 indicates that he or she is "neither satisfied nor dissatisfied" and a value of 7 indicates that a Marine is "very satisfied."

The fourteen satisfaction variables range in value from 1 to 5 on a Likert scale and measure a Marine's level of satisfaction with a broad range of factors that are potential contributors to "overall" satisfaction with military life. A value of 1 indicates that the Marine is "very dissatisfied", a value of 3 indicates that the Marine is "neither satisfied nor dissatisfied" and a value of 5 indicates that he is "very satisfied."

The five downsizing variables range in value from 1 to 5 on a Likert scale and measure a Marine's concerns with some of the realities that have to be faced by service members in an era of force reductions. A value of 1 indicates that the Marine

is "not at all concerned," a value of 3 indicates that he or she is "moderately concerned" and a value of 5 indicates that the Marine is "very greatly concerned."

Table 3.4. Dichotomous Variables First Term Females (N=901)

Variable	Frequency	Percent	Missing
DEMOGRAPHIC			
Race/Ethnic			
White + Other (WHITE)	578	64.0	0
Black (BLACK)	224	25.0	0
Hispanic (HISP)	99	11.0	0
Marital Status			
Single, no children (SNC)	388	44.1	20
Single, children (SWC)	64	7.2	20
Married, no children (MNC)	243	27.6	20
Married, children (MWC)	186	21.1	20
Education			
Some College (SOMECOL)	439	49.0	10
MILITARY EXPERIENCE			
Time/Tenure			
Paygrade			
E-3 (LCpl)	553	61.7	0
E-4 (Cpl)	304	33.9	0
E-5 (Sgt)	34	4.4	0
Desert Shield/Storm (DEPSWA)	197	22.0	0
Military Occupation			
Combat Arms(COMBAT)	0	0	0

Table 3.4 (Continued)

Variable	Frequency	Percent	Missing
Combat Support (CBTSUP)	580	64.4	0
Aviation Support (AVSUP)	128	14.2	0
Service (SERVICE)	193	21.4	0
Spousal/Family Influence			
Spouse, Active Duty (SPAMIL)	280	67.7	484
Family Separation (FAMSEP)	100	18.1	345
Spousal Influence (SPINF)	336	76.0	454
COGNITIVE			
Expectations			
Met Expectations (METEX)	263	29.6	13
EXTERNAL			
Labor			
Civilian Job Search (CIVEMP)	259	29.2	8

Source: Author.

Table 3.5. Continuous Variables First Term Females (N=901)

Variable (Name)	Mean	Std deviation
DEMOGRAPHIC		
Age entered active duty (ENTRYAGE)	19.77	2.07
Age as of 1/1/92 (AGECUR)	23.79	2.49
MILITARY EXPERIENCE		
Years of service as of 1/1/92 (YOS)	3.96	1.28
COGNITIVE		

Table 3.5 (Continued)

Variable (Name)	Mean	Std deviation
Satisfaction		
Overall Satisfaction with mil life (SATMIL)	4.07	1.68
Satisfaction with:		
Freedom (FREEDOM)	3.00	1.14
Acquaintances (ACQUAINT)	3.60	0.93
Co-workers (COWORK)	3.32	0.98
Assignments (ASSIGN)	3.37	0.86
Pay (PAY)	2.81	1.02
Environment for family (ENVIRON)	3.12	0.84
Frequency of moves (MOVES)	3.16	0.73
Retirement benefits (RETIRE)	3.02	0.61
Service to country (SERVE)	3.77	0.85
Current job (CURJOB)	3.15	1.12
Promotion opportunities (PROMOTE)	2.44	0.99
Job training (TRAIN)	3.06	0.97
Job security (SECURE)	3.23	0.96
Work conditions (WORKCOND)	3.08	1.03
Drawdown Concerns		
Long term opp. in military (LONGOPP)	2.57	1.59
Type of civ. job if separated (WORKTYPE)	3.33	1.50
Ability to get civ. job quickly (QUICKJOB)	3.48	1.48
Financial burden if separated (FINBURD)	3.38	1.60

Table 3.5 (Continued)

Variable (Name)	Mean	Std deviation
Ability to adjust to civ. life (CIVADJ)	2.16	1.38
EXTERNAL		
Prob. of finding good civ job (PROBJOB)	0.57	0.29

Source: Author

Table 3.6. Dichotomous Variables Second Term Males (N=310)

Variable	Frequency	Percent	Missing
DEMOGRAPHIC			
Race/Ethnic			
White + Other (WHITE)	229	73.9	0
Black (BLACK)	67	21.6	0
Hispanic (HISP)	14	4.5	0
Marital Status			
Single, no children (SNC)	72	24.2	12
Single, children (SWC)	2	0.7	12
Married, no children (MNC)	81	27.2	12
Married, children (MWC)	143	48.0	12
Education			
Some College (SOMECOL)	137	44.8	4
MILITARY EXPERIENCE			
Time/Tenure			
Paygrade			
E-4 (Cpl)	94	30.3	0

Table 3.6 (Continued)

Variable	Frequency	Percent	Missing
E-5 (Sgt)	197	63.5	0
E-6 (SSgt)	19	6.1	0
Desert Shield/Storm (DEPSWA)	101	32.6	0
Military Occupation			
Combat Arms(COMBAT)	47	15.2	0
Combat Support (CBTSUP)	150	48.4	0
Aviation Support (AVSUP)	60	19.4	0
Service (SERVICE)	53	17.1	0
Spousal/Family Influence			
Spouse, Active Duty (SPAMIL)	10	4.4	81
Family Separation (FAMSEP)	131	50.4	50
Spousal Influence (SPINF)	211	88.7	72
COGNITIVE			
Expectations			
Met Expectations (METEX)	182	58.7	0
EXTERNAL			
Labor			
Civilian Job Search (CIVEMP)	106	34.3	1

Source: Author.

Table 3.7. Continuous Variables Second Term Males (N=310)

Variable (Name)	Mean	Std deviation
DEMOGRAPHIC		
Age entered active duty (ENTRYAGE)	20.19	2.18
Age as of 1/1/92 (AGECUR)	27.71	2.21
MILITARY EXPERIENCE		
Years of service as of 1/1/92 (YOS)	7.54	1.66
COGNITIVE		
Satisfaction		
Overall Satisfaction with mil life (SATMIL)	4.71	1.66
Satisfaction with:		
Freedom (FREEDOM)	3.47	0.97
Acquaintances (ACQUAINT)	3.91	0.80
Co-workers (COWORK)	3.68	0.85
Assignments (ASSIGN)	3.39	0.95
Pay (PAY)	2.82	1.08
Environment for family (ENVIRON)	3.33	0.96
Frequency of moves (MOVES)	3.22	0.85
Retirement benefits (RETIRE)	3.13	0.92
Service to country (SERVE)	4.19	0.85
Current job (CURJOB)	3.35	1.17
Promotion opportunities (PROMOTE)	2.58	1.15
Job training (TRAIN)	3.12	1.05
Job security (SECURE)	3.09	1.11
Work conditions (WORKCOND)	3.37	1.00

Table 3.7 (Continued)

Variable (Name)	Mean	Std deviation
Drawdown Concerns		
Long term opp. in military (LONGOPP)	3.78	1.42
Type of civ. job if separated (WORKTYPE)	3.53	1.36
Ability to get civ. job quickly (QUICKJOB)	3.79	1.41
Financial burden if separated (FINBURD)	4.02	1.39
Ability to adjust to civ. life (CIVADJ)	2.48	1.48
EXTERNAL		
Prob. of finding good civ job (PROBJOB)	0.65	0.27

Source: Author.

Table 3.8. Dichotomous Variables Second Term Females (N=241)

Variable (Name)	Frequency	Percent	Missing
DEMOGRAPHIC			
Race/Ethnic			
White + Other (WHITE)	150	62.2	0
Black (BLACK)	72	29.9	0
Hispanic (HISP)	19	7.9	0
Marital Status			
Single, no children (SNC)	61	25.8	5
Single, children (SWC)	38	16.1	5
Married, no children (MNC)	42	17.8	5
Married, children (MWC)	95	40.3	5

Table 3.8 (Continued)

Variable (Name)	Frequency	Percent	Missing
Education			
Some College (SOMECOL)	154	64.4	2
MILITARY EXPERIENCE			
Time/Tenure			
Paygrade			
E-4 (Cpl)	121	50.2	0
E-5 (Sgt)	115	47.7	0
E-6 (SSgt)	5	2.1	0
Desert Shield/Storm (DEPSWA)	35	14.5	0
Military Occupation			
Combat Arms(COMBAT)	0	0	0
Combat Support (CBTSUP)	156	64.7	0
Aviation Support (AVSUP)	43	17.8	0
Service (SERVICE)	42	17.4	0
Spousal/Family influence			
Spouse, Active Duty (SPAMIL)	86	62.3	103
Family Separation (FAMSEP)	71	34.8	37
Spousal Influence (SPINF)	109	75.7	97
COGNITIVE			
Expectations			
Met Expectations (METEX)	111	46.8	4
EXTERNAL			
Labor			
Civilian Job Search (CIVEMP)	59	24.9	4

Source: Author.

Table 3.9. Continuous Variables Second Term Females (N=241)

Variable (Name)	Mean	Std deviation
DEMOGRAPHIC		
Age entered active duty (ENTRYAGE)	19.87	2.06
Age as of 1/1/92 (AGECUR)	27.37	2.54
MILITARY EXPERIENCE		
Years of service as of 1/1/92 (YOS)	7.38	1.40
COGNITIVE		
Satisfaction		
Overall Satisfaction with mil life (SATMIL)	4.51	1.57
Satisfaction with:		
Freedom (FREEDOM)	3.43	1.10
Acquaintances (ACQUAINT)	3.67	0.98
Co-workers (COWORK)	3.46	0.97
Assignments (ASSIGN)	3.41	0.95
Pay (PAY)	2.98	1.02
Environment for family (ENVIRON)	3.34	0.89
Frequency of moves (MOVES)	3.26	0.82
Retirement benefits (RETIRE)	2.95	0.81
Service to country (SERVE)	3.97	0.84
Current job (CURJOB)	3.26	1.16
Promotion opportunities (PROMOTE)	2.38	1.06
Job training (TRAIN)	3.14	1.00
Job security (SECURE)	3.10	1.04
Work conditions (WORKCOND)	3.25	1.04

Table 3.9 (Continued)

Variable (Name)	Mean	Std deviation
Drawdown Concerns		
Long term opp. in military (LONGOPP)	3.38	1.55
Type of civ. job if separated (WORKTYPE)	3.68	1.34
Ability to get civ. job quickly (QUICKJOB)	3.80	1.37
Financial burden if separated (FINBURD)	3.98	1.38
Ability to adjust to civ. life (CIVADJ)	2.47	1.47
EXTERNAL		
Prob. of finding good civ job (PROBJOB)	0.56	0.28

Source: Author.

b. Comparison Across Data Sets

Although the preliminary exploratory analysis of the individual data sets provides a broad overview of the characteristics in each sample, it is also interesting to make some observations across the different data sets. There are a number of differences in content among these data sets. For example, females are currently excluded from combat arms occupations, and therefore there are no observations of this variable in the first and second term female data sets.

Minority representation exhibits some interesting differences across term of service and by gender. In the first term male and female samples, blacks represent 13.9% and 25%, respectively. In the second term representation increases to 22.6% for males and 29.9% for females. Hispanic representation is much lower in the first term male and female samples, 6.4% and 11.0%, respectively. In the second term samples their representation actually decreases to 4.5% for males and 7.9% for

females. Actual enlisted minority representation in the Marine Corps in Fiscal Year 1992 was 19% black and 8% Hispanic [Ref. 36].

The marital status of the sample exhibits some interesting differences, particularly by gender. Over 63% of first term males are single and, of these, less than 1% have children. Just over 50% of first term females are single, however, 7% have children. In the second term, as we would expect, the number of single Marines decreases. Over 24% of males are single with less than 1% having children. Nearly 42% of second term females are single, however, a full 16.1% have children.

Although education level tends to differ by term of enlistment there are even more significant differences by gender. In the first term female sample 49% have some college level education, whereas for first term males this figure is only 30.3%. This represents a difference of 18.7%. In the second term samples the percentage of those with some college education increases to 64.4% for females and 44.8% for males, a difference of 19.6%.

Over 56% of first term males deployed in support of Desert Shield and Desert Storm as compared to 22% of first term females. Of those Marines in the second term data sets 32.6% of males and 14.5% of females deployed.

As previously mentioned, one of the important differences among the male and female data sets is the current exclusion of females from combat arms occupations. As a result of this, females' occupational groupings are limited to; combat support, aviation support and service. In the first term female model representation among these occupational categories is 64.6%, 14.3% and 21.1%, respectively. The second term data are similar as we find 64.7% in combat support, 17.8% in aviation support and 17.4% in service. In the first term male data set 30.1% are in combat arms, 37.1% are in combat support, 16.4% are in aviation support and 16.5% are in service. In the second term male sample there are differences in the

combat arms and combat support groupings as compared to those in the first term male sample. The percentage of Marines in combat arms declines to 15.2% but increases in combat support to 48.4%. Nearly 20% are in aviation support and 17.1% are in service.

Of those Marines who are married and in their first term, 4.2% of males indicate that their spouse is active duty military. In the first term female sample there is a remarkable difference. Of those who are married 67.7% indicate that their spouse is active duty military. Similar differences are also found in the second term samples. Just over 4% of males indicate that their spouse is active duty military whereas for females this figure is over 62%.

Of those first term Marines who are married, 39.3% of males and 18.1% of females indicated that they had been separated from their families for more than a year during their total military career. In the second term, 50.4% of males and 34.8% of females indicated the same.

For those Marines who are married, spousal influence on career decisions exhibits similarities by gender and across term of service. In the first term samples 77.1% of males and 76% of females report that their spouse has influence on their decision to stay in the military. For second term Marines, 88.7% of males and 75.7% of females report the same.

In the first term enlistment samples 29.6% of females and 33.2% of males indicate that the Marine Corps has met their expectations. As one would expect, there is an increase in met expectations for those in their second term. A full 46.8% of females and 58.7% of males indicate that the Marine Corps has met their expectations. It is interesting to note that, across terms of service, males are more likely than females to experience met expectations.

In the first term samples 39.7% of males and 29.2% of females report that they sought alternative civilian employment in the past twelve months. In the second term samples 34.3% of males and 24.9% of females indicate the same.

D. VARIABLE REDUCTION TECHNIQUES

Despite the theoretical support for the forty-three candidate explanatory variables presented in this study, a number of variable reduction techniques were employed to maintain the statistical integrity of the proposed model. Certain variables were eliminated in order to reduce the potential effects of bias and composite variables were constructed to combine measures of related attributes.

1. Elimination of Selected Candidate Variables

Although the three spousal/family influence variables provide some interesting insights in the preliminary analysis, they were eliminated because of their limited applicability across all four samples. In the first term samples the majority of survey respondents are single and as a result the three variables have limited responses. These variables would be more suitable in a study using separate models by marital status and are therefore beyond the scope of this thesis.

As a result of the restrictions placed on the samples a number of candidate explanatory variables were excluded from the model. Paygrade, years of service, current age and age at entry were eliminated because stratification of the samples and the imposed restrictions limited their variation in the data.

Military met expectations was eliminated as a candidate explanatory variable in both second term models. One of the unique characteristics of the second term Marine is that he or she has already made one reenlistment decision. It was felt that those second term Marines for whom the military had not met their expectations would have already separated at this first reenlistment point. The expected

homogenity in attitudes of met expectations led to the elimination of this variable from inclusion in the second term models.

Due to the limited number of observations in the single, with children variable for first and second term males, this variable was combined with the single, no children variable in each of these samples. The resultant candidate explanatory variable was called single.

2. Principal Component Analysis

Principal components analysis is a multivariate technique which attempts to simplify the interrelationships between a set of variables. This operation uses linear transformations to create a new set of uncorrelated variables called principal components. A measure of the amount of information provided by each of these components is its variance or eigenvalue. Principal components are arranged in order of decreasing variance therefore, the most informative is listed first and the least informative is listed last. Since the first few principal components convey most of the information under analysis (their variances are typically larger) the number of variables can be reduced without losing much information. [Ref. 36]

The SAS procedure "PROC PRINCOMP" was used on the 14 satisfaction variables and the 5 force reduction variables to create the principal component variables for each of the four separate data sets.

3. Factor Analysis

Although principal component analysis is a useful multivariate tool, its main objective is to explain as much of the total variance as possible. As a result of this, interpretation of these components in a useful manner is extremely difficult. Factor analysis is a multivariate technique that extracts from the principal components common factors which are easier to interpret. These new metrices are called rotated factors and are typically selected so that some of the variable loadings (correlations)

are large and the remaining are small. If a particular factor is highly correlated with a similar set of variables it becomes easier to interpret the factor in a meaningful manner. [Ref. 36]

The SAS procedure "PROC FACTOR" was used on the 14 satisfaction variables and the 5 force reduction variables in each of the four data sets. A total of five factors were retained for use in the retention model. Three factors were retained from the satisfaction variables; Factor A, Factor B and Factor C. Two were retained from the force reduction variables; Factor 1 and Factor 2. Tables 3.10 through 3.13 provide a summary of the results of the variable reduction techniques. Factors are assigned a meaningful composite dimension based on specific variable loadings to assist in their interpretations. Actual factor loadings on each variable are also presented. Due to the different characteristics of each of the samples, variable and factor loadings exhibit slight differences and, as a result, contributions to composite dimensions may differ or vary by sample.

Table 3.10. Factor Analysis of Satisfaction and Force Reduction Variables First Term Males

Dimension	Factor Name	Variable Loadings	Factor Loadings
Work/job satisfiers	FACTORA	Serve country Current job Work conditions Job training	0.68230 0.66613 0.63319 0.60167
Stability satisfiers	FACTORB	Pay and allowances Environment for family Retirement benefits Frequency of moves	0.71019 0.68379 0.61686 0.60782

Table 3.10 (Continued)

Dimension	Factor Name	Variable Loadings	Factor Loadings
Interactive satisfiers	FACTORC	Acquaintances Co-workers	0.82576 0.68104
Economic concerns	FACTOR1	Get civilian job quickly Financial burden Kind of civilian job Long term opportunity	0.85029 0.82537 0.81504 0.73900
Personal concerns	FACTOR2	Adjust to civilian life	0.96397

Source: Author.

Table 3.11. Factor Analysis of Satisfaction and Force Reduction Variables First Term Females

Dimension	Factor Name	Variable Loadings	Factor Loadings
Interactive satisfiers	FACTORA	Co-worker Acquaintances Work conditions	0.81038 0.66132 0.62035
Work/job satisfiers	FACTORB	Job training Job security Promotion opportunity	0.70255 0.67504 0.63030
Stability satisfiers	FACTORC	Frequency of moves Environment for family	0.69163 0.66223
Economic concerns	FACTOR1	Get civilian job quickly Kind of civilian job Financial burden	0.89077 0.84825 0.81407
Personal concerns	FACTOR2	Adjust to civilian life Long term opportunity	0.66489 0.61565

Source: Author.

Table 3.12. Factor Analysis of Satisfaction and Force Reduction Variables Second Term Males

Dimension	Factor Name	Variable Loadings	Factor Loadings
Work/job satisfiers	FACTORA	Work conditions Co-workers Current job Environment for family	0.74205 0.70888 0.66698 0.60700
Economic satisfiers	FACTORB	Retirement benefits Pay and allowances Promotion opportunity Job security	0.72788 0.68827 0.64576 0.62249
Personal satisfiers	FACTORC	Serve country Acquaintances	0.74400 0.65672
Economic concerns	FACTOR1	Get civilian job quickly Financial burden Kind of civilian job Long term opportunity	0.89307 0.83959 0.79382 0.79211
Personal concerns	FACTOR2	Adjust to civilian life	0.97301

Source: Author.

Table 3.13. Factor Analysis of Satisfaction and Force Reduction Variables Second Term Females

Dimension	Factor Name	Variable Loadings	Factor Loadings
Work/job satisfiers	FACTORA	Job training Current job Promotion opportunity Work conditions	0.81530 0.72050 0.63350 0.61514
Interactive satisfiers	FACTORB	Acquaintances Environment for family Co-workers	0.73798 0.67601 0.56086
Economic satisfiers	FACTORC	Retirement benefits	0.74930

Table 3.13 (Continued)

Dimension	Factor Name	Variable Loadings	Factor Loadings
Economic concerns	FACTOR1	Kind of civ job Get civ job quickly Financial burden	0.90361 0.88913 0.65413
Personal concerns	FACTOR2	Long term opportunity Adjust to civilian life	0.80615 0.77016

Source: Author.

The use of principal components and factor analysis reduced the 14 satisfaction and 5 force reduction variables to 5 factors which are relatively easy to interpret. The final retention model includes 21 explanatory variables which are summarized below by category and in Table 3.14.

Retention = f (Demographic, Military Experience, Cognitive, External)

Table 3.14. Summary of Explanatory Variables

DEMOGRAPHIC	MILITARY EXPERIENCE	COGNITIVE	EXTERNAL
Race White + Other Black Hispanic	**Time/Tenure** Deployed SWA	**Expectations** Met Expect	**Labor** Civilian Job Search Probability of Finding Civilian Job
Education Some College	**Military Occupation** Combat Arms Combat Support Aviation Support Service	**Satisfaction** Work/Job Stability Economic Interactive Personal	
Marital Status Single Single, No Children Single, Children Married, No Children Married, Children		**Force Reduction** Personal Concerns Economic	

IV. MODEL SPECIFICATION AND RESULTS

A. MODEL SPECIFICATION

The decision to remain on active-duty beyond an obligated service requirement can be considered a binary choice and therefore can be evaluated as a dichotomous dependent variable. This decision is given a value of one (stayer) if the Marine was still on active duty on 1 June, 1996, and a value of zero (leaver) otherwise.

A binary logistic (logit) regression model employing maximum-likelihood techniques is then used in this chapter to determine the probability of reenlisting for four different samples; first term males, first term females, second term males and second term females. The logit model is based on the cumulative logistic distribution function:

$$P_i = 1/(1+e^{-(\sum B_i X_i)})$$

where Pi = the probability of reenlistment

Xi = value of the explanatory variables

Bi = values for the estimated parameters of the model.

Once the logistic model has been estimated, the coefficients can be interpreted as the impact of a one-unit change in a particular explanatory variable, holding all others constant, on the log of the odds of reenlisting. [Ref. 38]

B. VARIABLE DEFINITIONS

As previously discussed, four categories of explanatory variables are hypothesized to affect the retention decision of first and second term Marine enlisted members. This section of the thesis describes the individual explanatory variables

included in each conceptual category and then introduces the dependent variable. Finally, a summary of the explanatory variables and the direction in which they are expected to affect the dependent variable in each of the four data sets is presented.

1. Explanatory Variables Defined

a. Demographic Variables

(1) **Race/Ethnic Group (WHITE, BLACK, HISP).** The race/ ethnic variable was divided into three categories each represented by a dichotomous variable; WHITE, BLACK and HISP. The base case is WHITE. Research suggests that minorities tend to reenlist at higher rates than whites [Refs. 25, 32, and 33]. This higher reenlistment rate for minorities may be due to the equal pay and equal opportunity afforded in the military. This thesis is expected to confirm the findings of previous studies and therefore the expected effects of these two variables are positive.

(2) **Marital Status (SINGLE, SNC, SWC, MNC, MWC).** For the purposes of this thesis the marital status of surveyed personnel was divided into four categories each represented by a dichotomous variable; single with no children (SNC), single with children (SWC), married with no children (MNC) and, married with children (MWC). As previously discussed, the limited observations in the SNC category in both male data sets necessitated combining SNC and SWC into the dichotomous variable, single (SINGLE). The base case is SNC for females and SINGLE for males. In a review of military literature Boesel and Johnson report mixed results on the effect of marital status and family size on retention. Although many studies find that the increased responsibilities of a family are associated with higher attrition rates [Refs. 18 and 27], several others report the opposite [Refs. 28, 32, and 33]. It is expected that those Marines who are married and/or have children would be more likely to reenlist than those Marines who are single. The increased

responsibilities associated with a family may influence Marines to reenlist for the benefits and job security and therefore these variables are expected to have positive signs.

(3) **Educational Level (SOMECOL).** SOMECOL is a dichotomous variable which has a value of one if the Marine has completed one or more years of college, and zero otherwise. Military research provides empirical evidence which suggests that the High School Diploma Graduate (HSDG) is more likely to be retained and promoted [Ref. 25]. However, in an era in which continued education is constantly stressed, a greater number of individuals are pursuing post-high school instruction. Cotton and Tuttle suggest that increased education is associated with higher turnover rates [Ref. 18]. This could be due to the assumption that those individuals with greater amounts of education should command a higher wage in the civilian market than those with less education. As a result, the opportunity costs of staying in the Marine Corps would be higher for those with more education. The expected effect of this variable is that those Marines with higher levels of education would be more likely to leave.

b. Military Experience Variables

(1) **Deployed for Operation Desert Shield/Storm (DEPSWA).** DEPSWA is a dichotomous variable created from the survey question which asked respondents about the duration of their deployment in support of Desert Shield/Storm. This variable was given a value of one if the Marine deployed to Desert Shield/Storm and zero otherwise. The expected effect of this variable is ambiguous. If we assume that individuals join the Marine Corp for the "adventure" and a desire for experiencing the potential "thrill" of combat, then we can expect DEPSWA to have a positive effect on reenlistment. Cooke, et al [Ref. 29] find that real world crises increase retention despite prolonged deployments or shortened

turnaround times. However, many individuals enlist or reenlist for the work experience or educational benefits and the last thing on their mind is deploying for war. In this case, the Persian Gulf conflict could be regarded as a "shock to the system" which Lee and Mitchell [Refs. 19 and 20] regard as a precursor to turnover. In this case we can expect DEPSWA to have a negative effect on reenlistment. It is hypothesized that concerns over potential conflict will outweigh any "sense of adventure" therefore, the expected effect of this variable is negative.

(2) **Occupation (COMBAT, CBTSUP, AVSUP, SERVICE).** The Military Occupation Speciality (MOS) variable was created using matched data by DMDC. For the purpose of this thesis it was divided into four distinct occupational groupings each represented by a dichotomous variable; combat arms (COMBAT), combat service support (CBTSUP), aviation support (AVSUP) and service (SERVICE). The base case is CBTSUP. COMBAT includes Marines in the infantry (03XX), artillery (08XX) and armor (18XX) communities. CBTSUP includes Marines from 14 different occupational specialties and included those in the personnel and administration (01XX), intelligence (02XX), logistics (04XX), motor transport (35XX) and nuclear biological and chemical (57XX) communities. AVSUP was created from 10 different occupational specialities in the aviation community and includes Marines in aviation ordnance (65XX), aviation supply (66XX) and air control/air support (72XX). The final grouping, SERVICE, includes occupations normally associated with base support or training functions. This category includes Marines in traffic management (31XX), public affairs (43XX) and legal services (44XX).

Buddin [Ref. 21] suggests that separation rates are inversely related to individual characteristics which are complementary with firm-specific investment. Since warfighting skills are not easily transferable to the civilian

labor market it is hypothesized that those Marines with COMBAT skills and training would be more likely to reenlist as compared to those with more "general" skills. The expected sign of this variable is therefore positive. Similarly, it is hypothesized that those Marines in the SERVICE and AVSUP communities have skills that are more easily transferable to the civilian market as compared to those Marines in the CBTSUP community. The expected signs of these two variables are negative.

c. Cognitive Variables

(1) **Met Expectations (METEX).** This dichotomous variable measures a first term Marine's attitude toward how well life in the Marine Corps has met his or her expectations. Second term Marines have already made one reenlistment decision, therefore, the expected homogeneity in their attitudes toward met expectations led to the exclusion of this variable from the second term models. First term Marines were asked to indicate their level of agreement with the statement, "life in the military is what I expected." Those respondents who indicated that they "strongly agreed" or "agreed" with this statement were given a value of one, otherwise they were given a value of zero. The degree to which the Marine Corps has met these expectations is believed to have a considerable impact on an individual's decision to reenlist. Porter and Steers [Ref. 15] suggest that the more an individual's expectations are met, the greater his satisfaction. They found that employees who stay with an organization are more likely to experience the feeling of met expectations than those who are constantly moving from one job to another. The expected effect of this variable on the retention decision is positive.

(2) **Satisfaction Composite Variables.** The use of principal component and factor analyses reduced the 14 satisfaction variables to three composite dimensions in each of the four data sets. For first term males and first term females these dimensions are; WORK/JOB, STABILITY and INTERACTIVE

satisfiers. Component variables for "work/job satisfiers" include satisfaction with current job and work conditions. Component variables for "stability satisfiers" include satisfaction with environment for family and frequency of moves. component variables for "interactive satisfiers" include satisfaction with coworkers and acquaintances. For second term males composite dimensions were; WORK/JOB, ECONOMIC and PERSONAL satisfiers. Component variables for "work/job satisfiers" include satisfaction with current job and work conditions. Component variables for "economic satisfiers" include satisfaction with pay and allowances and retirement benefits. Component variables for "personal satisfiers" include satisfaction with service to country and acquaintances. For second term females composite dimensions were; WORK/JOB, INTERACTIVE and ECONOMIC satisfiers. Component variables for "work/job satisfiers include satisfaction with job training and current job. Component variables for "interactive satisfiers" include satisfaction with acquaintances and co-workers. Component variables for "economic satisfiers" include satisfaction with retirement benefits. Much of the civilian and military literature reviewed in Chapter II suggests that satisfaction is a consistent and significant factor in the turnover decision. Increased satisfaction is associated with increased retention [Refs. 16, 17, 18, 32, and 33]. It is expected that those Marines who are more satisfied with the composite dimensions will be more likely to reenlist. The expected signs of these variables are therefore positive.

(3) **Force Reduction Composite Variables.** The 1992 DoD Survey provided a rare opportunity to capture service members' reactions in an era of force reductions. Five questions in the survey asked respondents to indicate their concerns with; long term opportunities in the military, the kind of work the Marine will go into if he has to leave the military, ability to get a civilian job quickly, financial burden on family if separated unexpectedly and ability to adjust to civilian

life. The use of principal component and factor analyses reduced the 5 force reduction variables to 2 composite dimensions in each of the four data sets; ECONOMIC concerns and PERSONAL concerns. Component variables for "economic concerns" include concerns about getting a good civilian job if separated and financial burden on family. Component variables for "personal concerns" include concerns with adjusting to civilian life if separated and concerns about long term opportunities in the military.

Although there is relatively little published empirical research on the recent downsizing phenomena, Evans [Ref. 30] develops a theoretical model of common concerns with retention as an outcome. Increased concerns and uncertainty about life in the military are found to have an adverse effect on retention intentions and actual retention.

The PERSONAL and ECONOMIC dimensions identified in this study address a Marine's concern with transitioning to the civilian community. Therefore, it is expected that, as concerns increase in these areas, the Marine would be more likely to reenlist. The expected signs of these variables are positive.

d. External Variables

(1) **Civilian Employment Search (CIVEMP).** The CIVEMP variable is dichotomous and was created from a survey question asking, "have you actively looked for civilian employment in the past 12 months ?" If the Marine indicated that he conducted an active search the variable was given a value of one otherwise it was coded zero. Much of the literature that addresses the search for alternative employment suggests that this activity is a precursor to actual turnover [Refs. 12 and 13]. It is expected that those Marines who have searched for alternative employment would be less likely to reenlist. The expected sign of this variable is negative.

(2) **Probability of Finding a Good Civilian Job (PROBJOB).** The variable PROBJOB was created from a survey question that asked respondents to indicate the likelihood of finding a good civilian job if they were to leave the service now. The original variable ranges from one, a zero in ten chance of finding a good civilian job, to 11, a ten in ten chance of finding a good civilian job. The variable was recoded to range in value between 0 and 1, a one unit increase representing a 10% increase in likelihood of finding a good job.

Research indicates that perception of job alternatives external to the organization is positively correlated with the ease associated with quitting [Refs. 11, 32, and 33]. It is expected that as a Marine's perceived chance of finding a good civilian job increases, his likelihood of reenlistment will decrease. The expected sign of this variable is therefore negative.

2. Dependent Variable (STAYER)

The dependent variable for this thesis was constructed from the DMDC Matched Member File. If the service member was still on active-duty in June 1996, the variable, STATUS, was coded as 1 and the member was considered a stayer. If the service member had left active-duty, STATUS was coded as zero and the service member was considered a leaver.

Table 4.1 presents a summary of the explanatory variables and the direction in which they are expected to affect the dependent variable in each of the four data sets.

Table 4.1. Explanatory Variables and Expected Signs

Variable Name	Variable Type	Expected Sign			
		First Term		Second Term	
		Male N=626	Female N=727	Male N=245	Female N=201
Demographic					
WHITE	Dichotomous	Base Case	Base Case	Base Case	Base Case
BLACK	Dichotomous	+	+	+	+
HISP	Dichotomous	+	+	+	+
SOMECOL	Dichotomous	-	-	-	-
SINGLE	Dichotomous	Base Case		Base Case	
SNC	Dichotomous		Base Case		Base Case
SWC	Dichotomous		+		+
MNC	Dichotomous	+	+	+	+
MWC	Dichotomous	+	+	+	+
Mil Experience					
DEPSWA	Dichotomous	-	-	-	-
COMBAT	Dichotomous	+	+	+	+
CBTSUP	Dichotomous	Base Case	Base Case	Base Case	Base Case
AVSUP	Dichotomous	-	-	-	-
SERVICE	Dichotomous	-	-	-	-
Cognitive					
METEX	Dichotomous			+	+
Satisfiers					
WORK/JOB	Ordinal	+	+	+	+
STABILITY	Ordinal	+	+	NA	NA
INTERACTIVE	Ordinal	+	+	NA	+

Table 4.1 (Continued)

Variable Name	Variable Type	Expected Sign			
		First Term		Second Term	
		Male N=626	Female N=727	Male N=245	Female N=201
ECONOMIC	Ordinal	NA	NA	+	+
PERSONAL	Ordinal	NA	NA	+	NA
Concerns:					
ECONOMIC	Ordinal	+	+	+	+
PERSONAL	Ordinal	+	+	+	+
External					
CIVEMP	Dichotomous	-	-	-	-
PROBJOB	Continous	-	-	-	-

Source: Author.

C. RESULTS

This section of the thesis presents the results of the analyses on each of the four data sets. The four data sets are discussed independently of one another in terms of the goodness-of-fit of the individual models and the statistical results of the logistic regression equations are then presented.

A general diagnostic for the overall goodness-of-fit of a model is determined using the -2 Log Likelihood statistic. This statistic has a chi-square distribution under the null hypothesis that all regression coefficients in the model are zero. A significant probability value ($p<0.05$) indicates that at least one of the coefficients for an explanatory variable is not zero. When the null hypothesis is rejected, it can be concluded that the regression model has some explanatory power.

Another statistical test which measures the goodness-of-fit of a logistic regression equation with binary responses is the Hosmer and Lemeshow test. This test divides the data into groups of roughly equal size based on the percentiles of the estimated probabilities. Observations in these groups are ranked according to the estimated probability of an event outcome and the difference between the observed and expected number of observations is measured by the Pearson chi-square statistic. This test statistic is then compared to a chi-square distribution. The resulting probability value determines whether the null hypothesis can or cannot be rejected. Failing to reject the null hypothesis suggests that the model provides a good fit to the data. [Ref. 40]

The ability of a model to classify stayers and leavers accurately provides some indication as to the usefulness of the regression equation. A prediction is considered correct when the actual outcome and the predicted outcome are the same. The "sensitivity" and "specificity" provide some insight in determining the predictive accuracy of the model. This information is obtained from a classification table obtained using the CTABLE option for PROC LOGISTIC in SAS. Sensitivity is the ratio of the number of stayers correctly classified as stayers by the model over the actual number of stayers. Specificity is the ratio of the number of leavers correctly classified as leavers by the model over the actual number of leavers. The actual proportion of stayers and leavers among the sample observations is compared to their predicted outcomes and an improvement in the number of observations correctly classified would suggest that the logistic equation is useful. [Ref. 40] Probability cutpoints in this study were determined by the actual retention rates in each of the four samples. For example, the actual retention rate for first term males was .171. In constructing the classification table for this sample, predicted probabilities below this .171 cutpoint were classified as leavers and those above it were classified as stayers.

Although collinearity diagnostics do not provide information about the goodness-of-fit of a model, they are a simple and reasonably effective tool for detecting the presence of multicollinearity. Multicollinearity can undermine the statistical integrity of the model as it becomes very difficult to distinguish the effects of one explanatory variable from another. High simple correlation coefficients ($r > 0.8$) and high variance inflation factors (VIF>2.0) would indicate that multi-collinearity is a potential problem. To determine the extent of multicollinearity in a logistic regression equation an identical ordinary least squares regression model, employing collinearity diagnostics, is estimated. [Ref. 38] No evidence of severe multicollinearity was detected in any of the estimated models ($r < 0.3$, VIF < 2.0).

1. First Term Male Data Set

The logistic regression model for the first term male data set had a -2 Log L Chi-square score of 91.671 with 17 degrees of freedom and was significant at the one percent level. The Hosmer and Lemeshow goodness-of-fit statistic was 11.93 with a probability value of 0.15434. From this we can conclude that the model fit the data well. No significant multicollinearity existed between the explanatory variables ($r < 0.3$) and variance inflation factors were all within acceptable levels (VIF < 2.0). The model correctly predicted 68.6% of those Marines who separated and 63.6% of those who reenlisted. Overall, the model correctly classified 67.7% of the sample. Table 4.2 summarizes the actual and predicted outcomes of the model.

As shown in Table 4.3, of the 17 explanatory variables used in the first term male model, five are statistically significant: COMBAT, FACTORA, FACTORB, FACTOR1 and METEX.

Table 4.2. Model Validity First Term Males

ACTUAL	PREDICTED LEAVERS	PREDICTED STAYERS	TOTAL
LEAVERS	68.6% (356)	31.4%(163)	519
STAYERS	36.4% (39)	63.6% (68)	107
TOTAL	395	231	626

Actual percent remaining on active duty: 17.1%
Percent correctly classified by model: 67.7%

Source: Author.

Table 4.3. Logistic Regression Results First Term Males N=626

VARIABLE	BETA	STD. ERROR	P VALUE
INTERCEPT	-1.687	0.430	0.001
BLACK	0.475	0.339	0.161
HISP	-0.675	0.590	0.253
SOMECOL	0.254	0.254	0.432
MNC	0.378	0.304	0.213
MWC	- 0.044	0.305	0.886
DEPSWA	-0.037	0.241	0.878
COMBAT***	-1.075	0.334	0.001
AVSUP	-0.311	0.335	0.351
SERVICE	0.152	0.324	0.639
METEX**	0.494	0.251	0.049
FACTORA***	0.444	0.134	0.001
FACTORB***	0.448	0.124	0.001
FACTORC	-0.031	0.125	0.805
FACTOR1***	0.512	0.147	0.001
FACTOR2	0.145	0.115	0.206
CIVEMP	-0.180	0.249	0.470
PROBJOB	-0.203	0.473	0.668

* Significant at ten percent level
** Significant at five percent level
***Significant at one percent level

Source: Author.

The variable COMBAT is significant at the one percent level, however, results indicate that those Marines in combat occupations are less likely to reenlist than those in combat support occupations. This is contrary to a priori expectations. A possible explanation for this result is the training expectations of the "more intelligent" individuals entering the Marine Corps. Marines in combat arms occupations may be more aware of the fact that the skills they are developing are not as attractive to the civilian job market as those being provided to Marines in combat support occupations. As a result of this they are cutting their "losses" by separating at the earliest opportunity.

FACTORA, FACTORB and FACTOR1 are also significant at the one percent level and are positively signed in accordance with expectations. For first term males, the composite dimension for FACTORA is "work/job satisfiers." Component variables include satisfaction with current job and work conditions. The composite dimension for FACTORB is "stability satisfiers" and component variables include satisfaction with frequency of moves and environment for family. The composite dimension for FACTOR1 is "economic force reduction concerns." Component variables include concerns with; finding a civilian job quickly if separated and financial burden if separated. As factor scores on these composite dimensions increase, first term males are more likely to reenlist.

The variable METEX is significant at the five percent level and the positive sign of this coefficient is in accordance with expectations. The sign and significance of this variable suggests that those first term male Marines who experience military met expectations are more likely to reenlist.

The lack of significance of the race/ethnic variables may suggest that, through a process of self-selection and organizational-selection, minorities in the military may be more like their white peers than are minorities in the civilian sector.

The variable SOMECOL was also not significant in the model despite the fact that 30% of the sample reported they had a year or more of college level education. It is possible that the lack of significance of this variable could be due to the fact that a year of college level education is not necessarily going to make an individual Marine more marketable in the civilian labor force. Without an actual degree in hand a potential employer may still regard an applicant as merely a high school diploma graduate.

The lack of significance of the marital status variables was surprising although the literature does report mixed results, particularly for Marines. The lack of significance of MNC and MWC could possibly be attributed to the fact that first term Marines have only been married for a short period of time. As a result, they may not yet have been fully exposed to the demands and responsibilities associated with a spouse and a family.

The lack of significance of DEPSWA could be attributed to opposing enlistment motives whose net effect "balance each other out." Many individuals may join the Marine Corps for the "adventure" and a desire to experience the thrill of combat. Others may have joined solely for the work experience or educational benefits. As a result of this ambiguity, it is possible that there may be no net "one-way effect" of this variable on the retention decision.

Two of the occupational speciality variables were not significant in the model, AVSUP and SERVICE. Although the skills and training obtained in these occupational groupings are considered to be easily transferable to the civilian labor market, it is possible that first term Marines are not yet fully aware of this. First term Marines may still be developing these new skills and, as a result, have little time or interest in trying to match these skills to occupations in the civilian labor market.

This lack of awareness of their enhanced "marketability" may contribute to the lack of significance of these variables.

Two cognitive variables were not significant in the model, FACTORC and FACTOR2. The composite dimension for FACTORC is "interactive satisfiers." Component variables were satisfaction with coworkers and satisfaction with acquaintances. The lack of significance of "interactive satisfiers" could possibly be attributed to the high professional and personal standards that the Marine Corps expects of its personnel. Whether it is inside or outside the workplace, all Marines are expected and required to treat others with courtesy, respect and dignity. Any deviation from these requirements is not tolerated. The formal and informal mechanisms in place to ensure these high standards may possibly contribute to the lack of significance of this variable. The composite dimension for FACTOR2 was "personal force reduction concerns." The component variable was the self-reported concern with adjusting to civilian life if separated. It is possible that first term Marines have not yet been completely socialized into the military environment as they still maintain close relationships with their "civilian life." As a result of this, separation from the military and the subsequent readjustment to civilian life would not be a relevant concern.

Neither of the external variables was significant in the model. It could be argued that first termers have little contact with the civilian labor market as a result of the socialization process that integrates them into the Marine Corp. It is possible that their primary focus is internal to the organization in learning the customs, traditions, rules and regulations of the Marine Corps culture. This socialization process may leave little time to consider external opportunities and may also promote a common attitude. This homogeneity in their perception of alternative job opportunities may possibly contribute to the lack of significance of these variables in the model.

2. First Term Female Data Set

The logistic regression model for the first term female data set has a -2 Log L Chi-square of 81.15 with 17 degrees of freedom and is significant at the one percent level. The Hosmer and Lemeshow goodness-of-fit statistic was 9.023 with a probability value of 0.3404. This suggests that the model fit the data well. No significant multicollinearity existed between the explanatory variables ($r < 0.3$) and variance inflation factors were all within acceptable levels ($VIF < 2.0$). The model correctly predicted 65.8% of those Marines who separated and 63.7% of those who reenlisted. Overall, the model correctly classified 65.3% of the sample. Table 4.4 summarizes the actual and predicted outcomes of the model.

Table 4.4. Model Validity First Term Females

ACTUAL	PREDICTED LEAVERS	PREDICTED STAYERS	TOTAL
LEAVERS	65.8% (375)	34.2% (195)	570
STAYERS	36.3% (57)	63.7% (100)	157
TOTAL	432	295	727

Actual percent remaining on active duty: 21.6%
Percent correctly classified by model: 65.3%

Source: Author.

Of the 17 explanatory variables used in this model, eight are statistically significant. A summary of the statistical results of all variables is presented in Table 4.5.

The variables SERVICE, FACTOR1 and FACTOR2 are significant at the one percent level. SERVICE has a positive sign which is contrary to a priori expectations. This suggests that first term females in service occupations are more likely to reenlist than those in combat support occupations. The positive sign of this variable could be a result of the less "disruptive" lifestyle associated with being in a service occupation. Female Marines in combat support occupations spend considerable time in the "field" environment and are also subject to overseas deployments in

Table 4.5. Logistic Regression Results First Term Females N=727

VARIABLE	BETA	STD. ERROR	P VALUE
INTERCEPT	-2.806	1.044	0.001
BLACK	0.241	0.245	0.418
HISP**	0.650	0.299	0.039
SOMECOL	0.199	0.205	0.164
SWC	-0.017	0.383	0.929
MNC	-0.252	0.242	0.196
MWC**	-0.591	0.275	0.039
DEPSWA	-0.259	0.253	0.339
AVSUP**	0.651	0.269	0.014
SERVICE***	0.726	0.239	0.001
METEX**	0.497	0.212	0.013
FACTORA	0.083	0.104	0.466
FACTORB	0.103	0.099	0.280
FACTORC	-0.150	0.097	0.228
FACTOR1***	0.391	0.119	0.002
FACTOR2***	0.506	0.097	0.001
CIVEMP	-0.232	0.222	0.297
PROBJOB*	0.641	0.382	0.100

* Significant at ten percent level
** Significant at five percent level
***Significant at one percent level

Source: Author.

support of various operations. Those Marines in service occupations are not subject to these stressors and as a result, they may be more likely to reenlist.

FACTOR1 and FACTOR2 are signed in accordance with expectations. The composite dimensions for these factors are "economic force reduction concerns" and "personal force reduction concerns," respectively. Component variables for "economic force reduction concerns" include concerns with; finding a civilian job quickly if separated and financial burden if separated. Component variables for "personal force reduction concerns" include concerns with; long term opportunities in the military and the adjustment to civilian life. The signs and significance levels of these variables suggests that as concerns increase with these dimensions, first term females are more likely to reenlist.

HISP, MWC, AVSUP and METEX are significant at the five percent level. The signs of HISP and METEX are positive and in accordance with expectations. This suggests that first term female Hispanics are more likely to reenlist than their white counterparts. First term females who experience met expectations are also more likely to reenlist than those who do not. The variables MWC and AVSUP were signed contrary to a priori expectations. The negative sign for MWC suggests that first term females who are married with children are less likely to reenlist than those who are single with no children. The increased responsibilities associated with raising a family, coupled with the possibility of prolonged separations could be responsible for the negative sign of this variable. The positive sign of the AVSUP coefficient suggests that those Marines in aviation support occupations are more likely to reenlist than those in combat support occupations. Recent changes in the Marine Corps have opened up new occupations to female Marines, many of which are in the aviation support community. It is possible that this new and challenging

environment increases advancement and leadership opportunities for females. As a result of this, they could be more likely to reenlist.

PROBJOB is significant at the ten percent level and is signed positively which is contrary to a priori expectations. This suggests that an increase in a Marine's self reported probability of finding a good civilian job is associated with an increase in her likelihood of reenlisting. The positive sign of this variable may indicate that those Marines confident in their civilian opportunities are also confident in their military opportunities and, as a result, would be more likely to reenlist.

Nine of the explanatory variables in the first term female model were not statistically significant. Possible explanations for the lack of significance of BLACK and SOMECOL are similar to those provided for first term males. Through a self and organizational-selection process, minorities in the military may be more like their white peers than minorities in the civilian sector. The lack of significance of SOMECOL may be attributed to the inability of a single year of college level education to enhance marketability in the civilian labor market.

SWC and MNC were both not significant in the model. The lack of significance of SWC was quite a surprise. However, only 8% of this first term female sample were single with children. The challenges facing single parents in a military environment are overwhelming. It is possible that, as a first term Marine, the true scope of these challenges has not yet been fully realized. It could also be suggested that, even though the demands on individuals are great, the Marine Corps may offer more support for single parents than they would secure in the civilian sector. The lack of significance of MNC, as was the case in the first term male model, could be related to the short period of time that the Marine has been married. As a result, they may not have been fully exposed to the demands and responsibilities associated with marriage.

The variable DEPSWA was not significant in the model. The lack of significance could be attributed to opposing enlistment motives whose net effect "balance each other out." Many individuals may join the Marine Corps for the

"adventure" and a desire to experience the thrill of combat. Others may have joined solely for the work experience or educational benefits. As a result of this ambiguity it is possible that there may not be a net "one-way effect" of this variable on the retention decision.

None of the composite satisfaction variables was significant in the model. The composite dimension for FACTORA was "interactive satisfiers." Component variables were; satisfaction with coworkers, acquaintances and work conditions. Whether it is inside or outside the workplace, all Marines are expected and required to treat others with courtesy, respect and dignity. Any deviation from these requirements is not tolerated. The formal and informal mechanisms in place to ensure these high standards may lead to a consistently positive evaluation of this dimension and possibly contribute to the lack of significance of this variable. The composite dimension for FACTORB was "work/job satisfiers." Component variables were; satisfaction with job training, job security and promotion opportunities. It is possible that lack of significance may be attributed to the relative naivety and inexperience of the first term Marine. In the first term of service job training is continuous both formally and on-the-job. Job security is guaranteed by contract and this may be all the "security" that a first term Marine needs. Promotion opportunities for the first term Marine are a function of time-in-service until they reach the E-5 boards. Those factors contributing to a Marine's "work/job satisfaction" are standardized in the first term of service. The limited variation in experience with the components of these "work/job satisfiers" may explain the lack of significance. The composite dimension for FACTORC was "stability satisfiers." Component variables were; satisfaction with frequency of moves and environment for family. The lack of significance of this variable could be attributed to the relatively short period of time that first term females have been in the Marine Corps. As a result of this, they have had limited

exposure to the anxiety and turmoil of frequent moves and the associated stress it places on the individual and/or family.

One of the external variables, CIVEMP, was not significant. A first term Marine has little opportunity to consider alternative jobs. Much of the first term of service is a "transitionary" period during which a Marine's attentions are primarily focused on assimilation into the Marine Corps culture. This leaves little time to devote to "external" interests.

3. Second Term Male Data Set

The logistic regression model for the second term male data set has a -2 Log L Chi-square of 44.743 with 16 degrees of freedom and is significant at the one percent level. The Hosmer and Lemeshow goodness-of-fit statistic was 3.8452 with a probability value of 0.8708. From this we can conclude that the model fit the data well. No significant multicollinearity existed between the explanatory variables ($r < 0.3$) and variance inflation factors were all within acceptable levels ($VIF < 2.0$). The model correctly predicted 57.0% of those Marines who separated and 59.0% of those who reenlisted. Overall, the model correctly classified 58.0% of the sample. Table 4.6 summarizes the actual and predicted outcomes of the model.

Table 4.6. Model Validity Second Term Males

ACTUAL	PREDICTED LEAVERS	PREDICTED STAYERS	TOTAL
LEAVERS	57.0% (73)	43.0% (55)	128
STAYERS	41.0% (48)	59.0% (69)	117
TOTAL	121	124	245

Actual percent remaining on active duty: 47.8%
Percent correctly classified by model: 58.0%

Source: Author.

As shown in Table 4.7, of the 16 explanatory variables in the second term male model, four are statistically significant.

Table 4.7. Logistic Regression Results Second Term Males N=245

VARIABLE	BETA	STD. ERROR	P VALUE
INTERCEPT	-1.092	0.546	0.866
BLACK	-0.030	0.367	0.936
HISP	-1.080	0.950	0.256
SOMECOL	-0.282	0.299	0.346
MNC	-0.054	0.408	0.895
MWC	0.201	0.360	0.577
DEPSWA	-0.063	0.314	0.841
COMBAT	-0.625	0.442	0.158
AVSUP	-0.320	0.370	0.389
SERVICE	0.350	0.438	0.424
FACTORA**	0.372	0.150	0.013
FACTORB***	0.463	0.154	0.003
FACTORC	-0.022	0.157	0.890
FACTOR1***	0.482	0.175	0.006
FACTOR2	0.004	0.153	0.981
CIVEMP**	-0.749	0.312	0.016
PROBJOB	0.665	0.635	0.295

* Significant at ten percent level
** Significant at five percent level
***Significant at one percent level

Source: Author.

FACTORB and FACTOR1 are significant at the one percent level and have positive signs which are in accordance with expectations. The composite dimensions for FACTORB are "economic satisfiers" and component variables include satisfaction

with pay and allowances and retirement benefits. The composite dimensions for FACTOR1 are "economic force reduction concerns." Component variables include concerns with the ability to get a civilian job and financial burden if separated.

The variables, FACTORA and CIVEMP, are significant at the five percent level and also have signs in accordance with expectations. The positive sign of FACTORA suggests that as a Marine experiences increased satisfaction with "work/job satisfiers" he is more likely to reenlist. The negative sign on the CIVEMP coefficient suggests that if a Marine has actively looked for alternative civilian employment in the previous 12 months, he is less likely to reenlist.

Evaluation of variables that were not statistically significant in this second term model differs somewhat from an evaluation of a first term model because of a number of essential considerations. Second term Marines have already completed their initial contract obligation and they have already reached and made an initial reenlistment decision. This self-selection process may contribute to more homogeneity within this subsample of the Marine Corps population. Additionally, second term Marines have proven that they are "successful." Their advancement through the ranks demonstrates that they have the professionalism, competency and potential for additional responsibility in the Marine Corps hierarchy.

The lack of significance of the race/ethnic variables may suggest that, through a process of self-selection and organizational-selection, minorities in the second term of service may be more similar to their white peers than those in the first term of service. Second term Marines have already passed one reenlistment "screening" point thus contributing to a more homogenous group. This homogeneity may contribute to the lack of significance of the race/ethnic variables.

Although 45% of second term males report a year or more of college level education, the variable SOMECOL is not statistically significant. It is possible that

without an actual college level degree a potential employer will still regard an applicant as merely a high school diploma graduate. This perception may contribute to the lack of significance of this variable.

None of the marital status variables were significant in the model. The lack of significance of these variables can perhaps be explained by the socialization process that a Marine, his spouse and his children undergo during his time in the Marine Corps. As a second term Marine, both he and his family have been exposed to the frequent challenges associated with military life. Over time they may come to accept these challenges as being part of their lives. It is also possible that the self selection process at the first reenlistment point could influence the lack of significance of these variables. Those Marines who may not have found the "right balance" between family and military responsibilities may already have separated at the first decision point. This homogeneity through self selection may also contribute to the lack of significance of the marital status variables.

DEPSWA was not significant for second term males. Unlike first term Marines, second term Marines may not be subject to the "adventure" versus "education" ambiguity associated with initial enlistment reasons. Second term Marines have typically completed a number of real-world deployments and have therefore been exposed to potential threat. The lack of significance of this variable could be attributed to the relative "ease" in which this Iraq conflict was resolved. Despite the dramatic build up of forces in the region over a 6 month period, the actual ground war was over in less than 100 hours. Ground hostilities were limited and the enemy was quickly overwhelmed. It is possible that many second term Marines regarded Desert Shield/Storm as just another routine deployment.

None of the occupational speciality variables were significant in the model. It could be argued that, at this juncture in their careers, the skills that second term

Marines are developing are personnel and leadership oriented. This would be the case regardless of what their particular occupational speciality was. This similarity in "skills" development could perhaps contribute to the lack of significance of these variables.

Two cognitive variables were not significant in the model, FACTORC and FACTOR2. The composite dimension for FACTORC is "personal satisfiers." Component variables include satisfaction with service to country and satisfaction with acquaintances. The lack of significance of the "personal satisfiers" may be attributed to shared beliefs and common acquaintances that develop through self-selection. Second term Marines have already passed one reenlistment point. This is indicative of a continued desire to serve one's country and also ensures that personal and professional friendships in the Marine Corps will continue to develop. These common "personal satisfiers" may contribute to the lack of significance of this variable.

The composite dimension for FACTOR2 is "personal force reduction concerns." Component variables include the self reported concern with adjusting to civilian life if separated during force reductions. A possible explanation for the lack of significance of this variable could be attributed to the "halo" effect. Second term Marines have already demonstrated their competitiveness through successful promotion and advancement and may feel that they are "immune" to any downsizing efforts. As a result of this, the potential for separation may not be a relevant concern for them.

The lack of significance of PROBJOB in the retention decision for second term female Marines could be a result of a "shared disinterest" in the civilian job market. Second term Marines have indicated their continued commitment to the Marine Corps by reenlisting for a second term of service. The additional leadership and occupational responsibilities associated with this second term may leave little time for

consideration of "external" opportunities. Additionally, the process of self and organizational-selection may contribute to a homogenous attitude which discounts the "civilian world" in favor of military camaraderie. Also, second term males may have a common perspective on civilian labor opportunities, leading to little variation in this variable. A combination of these factors may contribute to the lack of significance of this variable.

4. Second Term Female Data Set

The logistic regression model for the second term male data set has a -2 Log L Chi-square of 28.749 with 16 degrees of freedom and is significant at the five percent level. The Hosmer and Lemeshow goodness-of-fit statistic was 5.5754 with a probability value of 0.6947. This suggests that we the model fit the data well. No significant multicollinearity existed between the explanatory variables ($r < 0.3$) and variance inflation factors were all within acceptable levels ($VIF < 2.0$). The model correctly predicted 58.2% of those Marines who separated and 48.2% of those who reenlisted. Overall, the model correctly classified 51.7% of the sample. Table 4.8 summarizes the actual and predicted outcomes of the model.

Table 4.8. Model Validity Second Term Females

ACTUAL	PREDICTED LEAVERS	PREDICTED STAYERS	TOTAL
LEAVERS	54.2% (65)	45.8% (55)	120
STAYERS	51.8% (43)	48.2% (40)	83
TOTAL	108	95	203

Actual percent remaining on active duty: 40.8%
Percent correctly classified by model: 51.7%

Source: Author.

As shown in Table 4.9, of the 16 explanatory variables used in this model, five are statistically significant.

Table 4.9. Logistic Regression Results Second Term Females N=203

VARIABLE	BETA	STD. ERROR	P VALUE
INTERCEPT	0.407	0.569	0.475
BLACK	0.173	0.357	0.629
HISP	0.856	0.560	0.153
SOMECOL**	-0.645	0.321	0.045
SWC	-0.046	0.495	0.926
MNC	0.268	0.488	0.583
MWC	-0.129	0.409	0.754
DEPSWA***	-1.399	0.535	0.009
AVSUP	-1.079	0.425	0.853
SERVICE	-0.284	0.490	0.562
FACTORA	-0.024	0.171	0.886
FACTORB	0.056	0.158	0.725
FACTORC*	0.296	0.168	0.079
FACTOR1	0.083	0.191	0.662
FACTOR2**	0.381	0.160	0.017
CIVEMP*	-0.674	0.395	0.088
PROBJOB	-0.228	0.644	0.723

* Significant at ten percent level
** Significant at five percent level
***Significant at one percent level

Source: Author.

The variable DEPSWA is significant at the one percent level. FACTOR2 and SOMECOL are significant at the five percent level. FACTORC and CIVEMP are significant at the ten percent level. The significance and negative sign of DEPSWA

suggests that those second term females who deployed in support of Desert Shield/Storm are less likely to reenlist than those who did not deploy. The sign of SOMECOL is in accordance with apriori expectations and suggests that those second term females with more than a year of college level education are less likely to reenlist. The composite dimension for FACTOR2 for second term females is "personal force reduction concerns." The sign of the coefficient is positive and in accordance with expectations suggesting that increased concerns are associated with an increased likelihood of reenlisting. The composite dimension for FACTORC is "economic satisfiers." Component variables include satisfaction with retirement benefits. As expected, this variable has a positive sign which suggests that increased satisfaction with "economic satisfiers" is associated with an increased likelihood of reenlisting. The negative sign on the variable CIVEMP is in accordance with expectations and suggests that those Marines who actively looked for alternative civilian employment in the past 12 months are less likely to reenlist than those who did not.

The lack of significance of the race/ethnic variables may suggest that, through a process of self-selection and organizational-selection, minorities in the second term of service may be more similar to their white peers than those in the first term of service. Second term Marines have already passed one reenlistment "screening" point thus contributing to a more homogenous group. This homogeneity may contribute to the lack of significance of the race/ethnic variables.

None of the marital status variables were significant in the model. The lack of significance of these variables can perhaps be explained by the socialization process that a Marine, her spouse and her children undergo during her time in the Marine Corps. As a second term Marine, both she and her family have been exposed to the frequent challenges associated with military life. Over time they may come to

accept these challenges as being part of their lives. It is also possible that the self selection process at the first reenlistment point could influence the lack of significance of these variables. Those Marines who may not have found the "right balance" between family and military responsibilities may already have separated at the first decision point. This homogeneity through self selection may also contribute to the lack of significance of the marital status variables.

None of the occupational speciality variables were significant in the model. It could be argued that the skills that second term Marines are developing are personnel and leadership oriented. This would be the case regardless of what their particular occupational speciality was. This similarity in "skills" development could perhaps contribute to the lack of significance of these variables.

Three cognitive variables were not significant in the model, FACTORA, FACTORB and FACTOR1. The composite dimension for FACTORA is "work/job satisfiers." Component variables include satisfaction with job training, current job and promotion opportunities. The lack of significance of this variable could possibly be attributed to the standardization of those aspects attributed to "work/job satisfiers." In the military environment, activities governing job training, work conditions and promotion opportunities are directive in nature. Training requirements, for example, are specified by occupation and grade in marine Corps Orders and command Standard Operating procedures. Second term Marines are typically aware of organizational and personal requirements and have come to accept and expect certain standards. As a result of these organizational standards and expectations, there may be a consistently positive evaluation of this dimension. Additionally, second term Marines tend to be more satisfied and more homogenus than first term Marines in their responses to the dimensions of this variable. A combination of these factors may contribute to the lack of significance of this variable. The composite dimension for FACTORB is

"interactive satisfiers." Component variables include satisfaction with acquaintances, satisfaction with coworkers and satisfaction with environment for family. The lack of significance of this variable may be a result of the socialization process that a Marine undergoes during her time in the Marine Corps. At this stage in their career, second term Marines have been exposed to all aspects of military life. They are aware and abide by the norms, rules and regulations that govern their work environment and their family life. This common perception of expectations based on experiences may contribute to the lack of significance of "interactive satisfiers".

The composite dimension for FACTOR1 is "economic force reduction concerns." Component variables include the self reported concern with adjusting to civilian life if separated during force reductions and, the concern with long term opportunities in the military. A possible explanation for the lack of significance of this variable could be attributed to the "halo" effect. Second term Marines have already demonstrated their competitiveness through successful promotion and advancement and may feel that they are "immune" to any downsizing efforts. As a result of this, the potential for separation may not be a relevant concern for them.

The lack of significance of PROBJOB in the retention decision for second term female Marines could be a result of a "shared disinterest" in the civilian job market. Second term Marines have indicated their continued commitment to the Marine Corps by reenlisting for a second term of service. The additional leadership and occupational responsibilities associated with this second term may leave little time for consideration of "external" opportunities. Additionally, the process of self and organizational-selection may contribute to a homogenous attitude which discounts the "civilian world" in favor of military camaraderie. This lack of variation in the data may also contribute to the lack of significance of this variable in the model.

D. PARTIAL EFFECTS

Logistic regression coefficients are often difficult to interpret because their values can vary with their evaluation point. A more practical approach is to evaluate the model in terms of its partial effects. This approach provides a measure of the impact of a change in an explanatory variable on the retention probability of a referent individual. [Ref. 26] The partial effect is calculated only for those explanatory variables that are statistically significant in the models. A summary of the partial effects for all four data sets is presented in Table 4.10.

Table 4.10. Partial Effects of Significant Explanatory Variables on Retention All Data Sets

Variable	First term Male	First term Female	Second term Male	Second term Female
Prob. of reenlisting	0.13	0.14	0.63	0.38
HISP	-	0.09	-	-
SOMECOL	-	-	-	-0.16
MWC	-	-0.06	-	-
DEPSWA	-	-	-	-0.31
COMBAT	-0.08	-	-	-
AVSUP	-	0.10	-	-
SERVICE	-	0.12	-	-
METEX	0.07	0.08	-	-
FACTORA	0.06	-	0.08	-
FACTORB	0.06	-	0.10	-
FACTORC	-	-	-	0.07

Table 4.10 (Continued)

Variable	First term Male	First term Female	Second term Male	Second term Female
FACTOR1	0.070	0.05	0.10	-
FACTOR2	-	0.07	-	0.09
CIVEMP	-	-	-0.18	-0.17
PROBJOB	-	0.01	-	-

Source: Author.

1. First Term Male Data Set

The referent or "base case" first term male Marine was white with no college level education and was unmarried. His occupational speciality was combat support and he had deployed in support of Desert Shield/Desert Storm. His level of satisfaction with work/job, stability and interactive relations were all at the mean levels for the sample. His levels of concern with personal and economic considerations due to force reductions were also at the mean levels for the sample. He indicated that the military had not met his expectations , however, he had not actively looked for alternative civilian employment in the past 12 months. His self reported probability of finding a good civilian job was nearly 0.7. The predicted probability of his retention was about 13%.

A Marine in a combat arms occupational speciality with the same base case characteristics as a Marine in combat support would have an 8% lower retention probability. A Marine with the same characteristics as the referent individual with the exception that the Marine Corps had met his expectations would be 7% more likely to reenlist. A one standard deviation increase from the average component score for the composite satisfaction factors of work/job and stability considerations was each

associated with a 6% increase in retention likelihood. A one standard deviation increase from the average component score for the composite force reduction concern of economics was associated with a 7% increase in retention likelihood.

2. First Term Female Data Set

The referent or "base case" first term female Marine was white with no college level education and was unmarried and had no children. Her occupational speciality was combat support and she had not deployed in support of Desert Shield/Desert Storm. Her level of satisfaction with interactive relations, work/job and location stability were all at the mean levels for the sample. Her level of concern with personal and economic considerations due to force reductions were also at the mean levels for the sample. She indicated that the military had not met her expectations however she had not actively looked for alternative civilian employment in the past 12 months. Her self reported probability of finding a good civilian job was just over 0.5. The predicted probability of her retention was about 14%.

An Hispanic first term female with the same base case characteristics as a white first term female had about a 9% higher retention probability. A first term female whose marital status was married with children had a 6% lower retention likelihood than a first term female who was single with no children. A Marine in an aviation support or service occupational speciality with the same base case characteristics of a Marine in combat support would have a 10% and 12% higher retention probability, respectively. A first tern female Marine with the same characteristics as the referent individual with the exception that the Marine Corps had met her expectations would be 8% more likely to reenlist. A one standard deviation increase from the average component score for the composite force reduction economics and personal concerns was associated with a 5% and a 7% increase in

retention likelihood, respectively. A 10% increase in the probability of finding a good civilian job is associated with nearly a 1% increase in retention likelihood.

3. Second Term Male Data Set

The referent or "base case" second term male Marine was white with no college level education and was married and had children. His occupational speciality was combat support and he had not deployed in support of Desert Shield/Desert Storm. His level of satisfaction with work/job, economic and personal considerations were all at the mean levels for the sample. His level of concern with personal and economic considerations due to force reductions were also at the mean levels for the sample. He indicated that hr had not actively looked for alternative civilian employment in the past 12 months. His self reported probability of finding a good civilian job was just over 0.6. The predicted probability of his retention was about 63%.

A one standard deviation increase from the average component score for the composite satisfaction factors of work/job and economic considerations for second term males was associated with an 8% and a 10% increase in retention likelihood, respectively. A one standard deviation increase from the average component score for the composite force reduction concern of economics was associated with an 10% increase in retention likelihood. A second term male Marine who had actively looked for alternative civilian employment had an 18% lower retention probability than the referent individual.

4. Second Term Female Data Set

The referent or "base case" second term female Marine was white with over a year of college level education and was married and had children. Her occupational speciality was combat support and she had not deployed in support of Desert Shield/Desert Storm. Her level of satisfaction with work/job, interactive relations and

economic considerations were all at the mean levels for the sample. Her level of concern with personal and economic considerations due to force reductions were also at the mean levels for the sample. She indicated that she had not actively looked for alternative civilian employment in the past 12 months. Her self reported probability of finding a good civilian job was just over 0.5. The predicted probability of her retention was about 38%.

A second term female with a year or more of college level education had a 16% lower retention likelihood than a peer without any college education. A second term female Marine ho had deployed in support of Desert Shield/Desert Storm had nearly a 31% lower retention likelihood than a second term female who did not deploy. A one standard deviation increase from the average component score for the composite satisfaction factor of economic considerations for second term females was associated with a 7% increase in retention likelihood. A one standard deviation increase from the average component score for the composite force reduction personal concern was associated with a 9% increase in retention likelihood. A second term female Marine who had actively looked for alternative civilian employment had a 17% lower retention probability than the referent individual.

V. CONCLUSIONS AND RECOMMENDATIONS

A. SUMMARY

This thesis investigated those factors that influence the reenlistment decisions of first and second term Marine Corps enlisted members. A multivariate logistic regression model was estimated to determine the relative importance of four categories of explanatory variables on the retention decision. The data used for this study were drawn from the *1992 Department of Defense Survey of Officer and Enlisted Personnel and their Spouses.* The survey data were matched with information from the Active Duty Military Master and Loss File and this merged file provide actual retention information as of 1 June 1996. Restrictions imposed on the data were: first and second term Marine Corps enlisted members, paygrades E-3 to E-6; more than two but less than ten years of service; and with two years or less remaining on their enlistment contract when they took the survey in 1992.

The models used in this study represent a departure from the traditional econometric or organizational behavior approaches to turnover which typically focus on one particular aspect of the turnover process . A more "complete" conceptual model is developed through the use of a robust social science modeling approach. This approach provided the opportunity to examine a broad range of turnover determinants. Their relative contributions to the turnover decision were evaluated to provide current information for use by Marine Corps policy planners.

Although the analysis conducted generally confirms a number of findings from previous studies, there were, however, some distinct differences in terms of the significance and effect of various determinants of turnover. These differences were evident across enlistment term and by gender suggesting that the macro level, across-the-board policies employed by the Marine Corps to improve retention may not be as

effective or as cost efficient as those policies that target specific major groups within the population. In an era of diminishing defense dollars, it is imperative that the Marine Corps ensure that every dollar spent on improving retention gets the highest return possible. Funding personnel retention initiatives that have little or no effect is unacceptable in these fiscally austere times. Although broad level policies can continue to be an effective method for addressing certain Marine Corps wide retention issues, findings in this study suggest that this type of approach is not always effective.

Surprisingly, no single potential determinant of turnover was consistently significant in all four samples evaluated in this study. Economic force reduction concerns was significant in three of the four samples. Military met expectations was significant only for first term Marines. Economic satisfiers and alternative civilian employment were significant only in the second term samples. Work/job satisfiers was significant only in the male samples and personal force reduction concerns was only significant for the female samples. The importance of considering micro level policies to improve retention is highlighted by the number of variables which were significant only for a single sample. The variable, combat, was significant only in the first term male sample. Deployment to South-West Asia and some college was significant only for second term females. Variables significant only for first term females were: Hispanic, married with children, aviation support, service and probability of finding alternative employment.

B. IMPLICATIONS

The economic uncertainty associated with separations in an era of force reductions contributed to increased retention for both first term samples and also for second term males. A one standard deviation increase in a first term Marine's average level of economic concerns if separated during force reductions increased the likelihood of reenlisting by 7% for males and 5% for females (other characteristics

held constant). For second term males, retention likelihood was increased by 10%. A fundamental issue raised by the significance of this factor suggests that we need to prepare Marines for the economic challenges of separations in these turbulent times. Retention based on fear has the potential to affect unit cohesion and, ultimately, the mission adversely. Commanders at all levels need to be fully aware of the detrimental impact that force reductions may have on their Marines and should take the steps to ensure that they have access to the necessary information and resources that will help them make informed decisions about their future.

The importance of met expectations for the first term enlisted Marine provides challenges for recruiters and added responsibility for the Fleet Marine Force commands who receive entry level Marines. These Marines need to be better prepared for the "shock" of boot camp and the responsibilities and requirements that come with the title "Marine." The Navy recently introduced a "Goal Card" program in which new enlistees are assisted in setting and achieving personal goals as they make the transition into the military environment. A similar program in the Marine Corps could assist in this transition. Realistic personal and professional expectations could have a positive effect on the individual's reenlistment decision.

For the second term of enlistment, common factors affecting retention for both male and female Marines are economic satisfiers and civilian job search. The component variables for the composite dimension of economic satisfiers include: satisfaction with; retirement benefits, pay and allowances, job security and promotion opportunities. Although actions to influence economic job satisfiers are generally beyond the direct control of Marine Corps policy planners, steps can be taken to protect and promote the importance of these benefits. At the DoD and Congressional level, the importance of protecting military pay and retirement benefits should be continually stressed. Historically military pay has lagged behind the civilian sector

by as much as 14%. This could once be justified by higher job and retirement security but with the advent of force reductions this is no longer the case. [Ref. 30] Within the Marine Corps, policy planners should continue to ensure that promotion policies remain equitable and competitive. The Marine Corps must maintain a promotion system that provides opportunities for career advancement based on merit and performance.

Improving a Marine's perception of the economic benefits available in the Marine Corps may also go to great lengths in increasing his or her retention likelihood. Often Marines are bombarded by a media that is constantly referring to the eroding benefits in the military and, as a result, they question their future career. Career planners and small unit leaders can help influence these decisions through candid discussion of the economic benefits of staying in the military. All Marines are required to be formally and informally counseled at regular intervals. Included in these counseling sessions should be a review of an individual Marine's benefits and entitlements to include: the medical/dental benefits, commissary and exchange privileges, twenty year retirement implications and competitive salary with tax free allowances. A periodic reminder of these benefits may be a simple and cost-free method to increase a Marine's economic satisfaction with military life.

Career planners can play an important role in addressing the negative significance of the search for alternative employment on the second term Marine's retention decision. Career counselling should be aggressively aimed at those quality Marines whom the Marine Corps needs as part of its career force. All levels of commanders should be required to talk with those Marines who are approaching a reenlistment point. Active interest shown by the command's leadership may be all that is needed to encourage a quality individual to "stay Marine."

The work/job satisfier variable was significant for the retention decision only in the male samples. The component variables for the composite dimension of work/job satisfiers include: satisfaction with; current job, work conditions and job training. Although Marine Corps planners may find some difficulty in developing an encompassing policy that addresses this factor, an evaluation of the significant component variables gives some insight and direction for policy considerations for implementation in the workplace. The Marine Corps should continue to develop and maintain a challenging and rewarding work environment that fosters the personal and professional development of our future leaders.

Although the business of the Marine Corps is inherently dangerous this should not preclude the requirement for a safe work environment for our Marines. Whether it is conducting a live-fire training exercise or changing a tire on a 5-ton vehicle, leaders need to be conscious of the safety of their Marines and the individual Marine needs to know that appropriate and reliable procedures and rules are in place to protect him or her.

Job training needs to continue to be appropriate and effective. The Marine Corps places an enormous amount of responsibility on the enlisted Marine. In order to ensure that these Marines have the necessary leadership and technical skills to perform effectively, they have to be provided with continuous and realistic training.

In both female samples, a common factor affecting retention is personal force reduction concerns. A one standard deviation increase in a first term Marine's economic concerns if separated during force reductions increased her likelihood of reenlisting by 7%. For second term Marines retention likelihood is increased by nearly 10%. The component variables for the composite dimension of economic concerns are: concern with long term opportunities in the military and concerns with adjusting to civilian life. Separation from the military and returning to civilian life

has many challenges associated with it. The stress associated with voluntary or involuntary separation in an era of force reductions can contribute to these challenges and has clear implications for Marine Corps policy planners. Although future plans about downsizing still remain unclear, the Marine Corps needs to be prepared to communicate quickly any Congressional decisions about further restructuring or cuts in force size. This flow of information will assist in alleviating confusion and concern by providing accurate details on promotion opportunity and job security in certain career fields. This will allow Marines to make informed career decisions or start appropriate actions to ensure a smooth transition into the civilian community. For those Marines who decide or are forced to separate, sufficient time should be provided to them in order to take advantage of programs offered to retrain or transition. Programs such as the Transition Assistance Management Program should be appropriately staffed and funded in order to handle an increased numbers of participants effectively. These programs offer referral services, career counselling ,training opportunities and workshops to build career skills. Their importance as a necessary service to the separating Marine cannot be underestimated particularly during the turbulence of force restructuring and downsizing.

As previously discussed, a number of variables were significant only in a particular sample. The variable, combat, was significant and negative only for first term males. First term male Marines in combat occupations were 8% less likely to reenlist than those in combat support occupations. Although Selective Reenlistment Bonuses have traditionally been allocated to those military occupations with more technical skill requirements, the significance of this variable has some micro level implications for policy planners. Policy planners should identify those combat specialities with high turnover rates and consider allocating bonuses to those with manpower shortages that are potentially critical. As an alternative, first term male

Marines could be given the option of retraining in a non-combat speciality upon completion of their first term of service.

Deployment in support of Desert Shield/Desert Storm had a negative effect on the retention of second term females. Female Marines who deployed in support of this operation were 26% less likely to be retained than those who did not deploy. This is a disturbing finding considering recent legislation that increased opportunities for females to serve in combat support occupations which previously were restricted to males only. Second term Marines provide the core for the Marine Corps' future career force and the apparent aversion of females to potential conflict provides challenges for policy planners. In recent years the involvement of the Marine Corps in low intensity operations with a potential for hostile engagements has grown considerably. This is not likely to change in the near future.

The Marine Corps has to prepare female Marines for involvement in potentially hostile environments. Training programs need to be realistic and should address both physical development and mental preparedness. This training needs to begin at the entry level and should be constantly reinforced by commands in the Fleet Marine Force. Although support networks for families of deployed Marines have long been in existence, a review of these networks should be conducted to determine any additional requirements. Support networks have historically been built around the concept which sees the male Marine deploying and the female spouse staying at home. In the current environment, female Marines are, and will continue to be, part of the deploying unit. As a result of these changes, the Marine Corps needs to ensure that the support network in place is providing the appropriate psychological and physical support to the deployed Marine and his or her family.

A year or more of college level education also had a negative impact on the retention of second term females. Females who reported this level of education were

16% less likely to reenlist than those who had no college education. The Marine Corps continues to stress the importance of continued education for its personnel and should continue to do so in the future. Continued education enhances the personal and professional development of the individual and contributes to the overall "quality" of the Marine Corps. Career planners and unit commanders can play an important role in addressing the negative significance of this factor on the second term female Marine's retention decision. Career counselling should be aggressively aimed at those quality Marines whom the Marine Corps needs as part of its career force. Those individuals seeking to develop themselves should be recognized privately and publicly. Commanders should be encouraged to reward achievement through incentives such as meritorious promotion recommendations or "Marine of the Quarter/Year" programs. If the Marine Corps can develop an incentive program that enhances opportunities for recognition and advancement for academic accomplishment, it should be able to encourage many of these individuals to "stay Marine."

The variables; Hispanic, married with children, aviation support and service were all significant only for the retention of first term females. First term Hispanic females were 10% more likely to be retained than those who were white. Attracting minorities and females to the military continues to be a goal of Marine Corps policy planners. Policies that strive for population representation should continue to be a priority for the Marine Corps.

First term females who were married with children were 6% less likely to reenlist than those who were single without children. Although the success of quality-of-life initiatives in recent years has enhanced the morale of the enlisted Marine, the significance of this variable indicates that there is still work to be done. Quality of life programs which benefit the entire Marine Corps should continue to be maintained, however, the next step for policy planners could be targeting specific groups within

the Marine Corps in order to identify their specific quality-of- life concerns. A survey of married first term females, for example, may reveal dissatisfaction with on base child care facilities or insufficient maternity leave. The additional information gathered from such surveys would allow policy planners to tailor issues for micro level retention application.

The significance and positive effect of aviation support and service on the retention of first term females provides some policy implications for accession requirements and retention bonuses. Marines in aviation support are 10% more likely to reenlist than those in combat support, Marines in service occupations are 11% more likely to reenlist. At the entry level, manpower planners could consider reducing the number of accessions into the aviation support and service occupations and increasing accessions into the combat support occupations. This approach would compensate for higher turnover in the combat support community without increasing overall accession numbers. An alternative approach would suggest a selective redistribution of funding for reenlistment bonuses. Higher retention rates in the aviation support and service occupations would suggest that monetary retention incentives in these communities could be reduced or eliminated. These incentives could then be allocated to those occupations elsewhere in the Marine Corps that are experiencing critical personnel shortages or lower retention rates.

C. LIMITATIONS AND AREAS OF FUTURE RESEARCH

This study has a number of limitations. The first and most obvious is the limited sample size. Separation of the sample into subgroups by gender and term of service often limited the study to general distinctions between groups and required combining or eliminating several variables to ensure parsimony. Another limitation is related to the dependant variable used in the models. No information was provided as to the reasons why a service member separated. As a result, it was impossible to

make a distinction between voluntary and involuntary separations. Finally, the 1992 DoD Survey used in this study is comprised of cross sectional data and, as such, is representative of Marine Corps enlisted personnel only at the time they took the survey. Changes in characteristics and attitudes between the fielding of the study and the determination of active duty status in 1996 were not captured in the data set.

This study cannot provide a comprehensive evaluation of the retention decision. There is a need for follow-on evaluation in several areas. An improved model of turnover could be developed which distinguishes between voluntary and involuntary separations. Due to certain data restrictions in this study it was impossible to determine which respondents in the sample were separated against their will for disciplinary, or other reasons, or who may have left through death or disability. It could be argued that failure to account for this distinction may confound or compromise the results of the analysis. Further examination of reenlistment behavior should attempt to make this distinction in order to provide a more concise picture of this process.

No attempt was made in this paper to examine the reenlistment decision across different Military Occupational Specialities. The Marine Corps is not only concerned with total manpower levels but also with ensuring that the correct number of people are in each occupational speciality. Future research could divide data into subsamples by major occupational group in order to identify factors significant for retention across all occupational groups and also factors that change across groups. Samples could also be further stratified by gender and enlistment term.

The significance of the Desert Shield/Desert storm variable for second term females has some disturbing implications which may warrant additional investigation. Further examination of the impact of real world "conflict" on this subsample of the Marine Corps population would provide additional insight as to whether this possible

aversion to potentially hostile operations is a trend, or just an isolated anomaly. Although conflicts on the scale of South-West Asia are infrequent in military history, data from operations in Somalia or Bosnia may provide some comparable information.

Marine Corps involvement in peacekeeping, peacemaking and humanitarian operations has increased significantly in the 1990s and involvement in these operations is expected to continue as we move into the 21st century. Although the 1992 DoD Survey attempts to capture the deployment history of respondents, information on participation in these types of operations is not available. Future surveys should attempt to include questions concerning a service member's involvement and reactions to these "operations-other-than-war." These data would provide a rich source of information for retention analysis in an area which policy planners know little about.

Future research could also examine differences in retention behavior by marital status. In this study, preliminary analysis of the data indicated some interesting results. For example, 6% of first term females were single parents. For second term females, this figure jumped to over 16%. Subsample stratification could possibly include same-service marriages and single-parent families. In recent years, marriage and the Marine Corps has been the subject of extensive debate at the highest levels. This debate has been especially controversial in terms of policy implications for Marines at the entry level. The findings of research addressing these issues could provide some analytical support to assist Marine Corps planners in developing appropriate policy.

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